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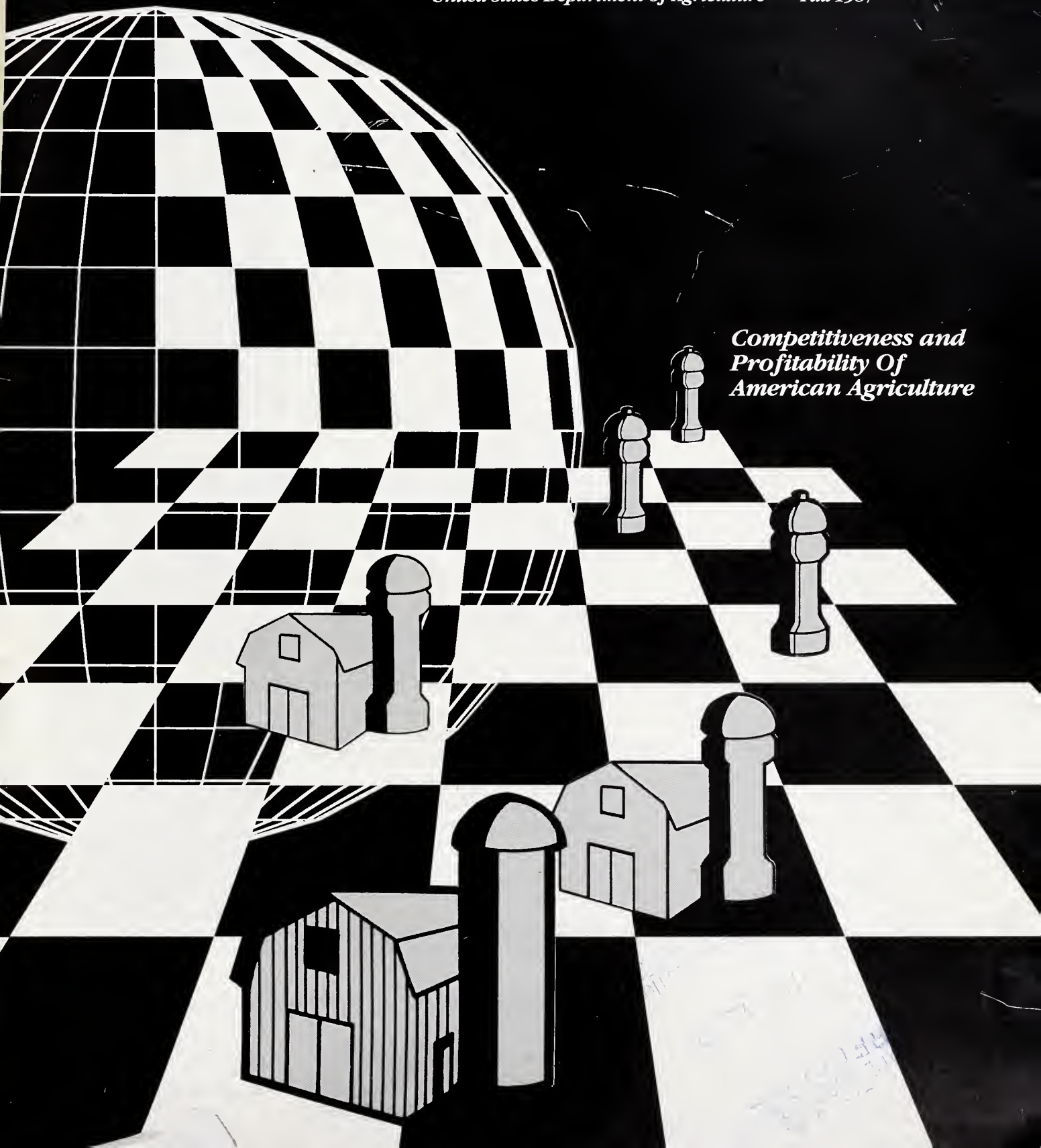
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extension review

United States Department of Agriculture

Fall 1987

*Competitiveness and
Profitability Of
American Agriculture*





Competitiveness and Profitability of American Agriculture

Situation

Future profitability in American agriculture depends on the ability of producers to maintain competitiveness in a global economy. The potential for profit hinges on economically efficient U.S. production and marketing systems and supportive agricultural, macroeconomic, and international trade policies.

Increased competitiveness and profitability will require development and dissemination of new technology. Furthermore, policies must be designed to enhance U.S. agriculture's competitiveness rather than detract from it. Educational programs in production management, financial management, marketing, and public policy must be integrated toward increasing competitiveness and profitability.

Competitiveness is defined as the ability of U.S. agriculture to increase its share of foreign and domestic markets. *Profitability* is defined as the ability to generate returns to land, labor, capital, and management equivalent to returns in other uses and to provide a reasonable chance for an acceptable return for risk.

Critical Issues

To meet these challenges and opportunities, the Cooperative Extension System must address nine critical issues.

Issue 1.

Improve the economic efficiency and integration of the total agricultural system from producer to consumer.

Extension Goal And Roles:

- Teach agricultural producers and businesses the management skills required to integrate production, financial, and marketing decisions for maximum profit.

- Facilitate and stimulate coordination within the agricultural system.

Issue 2.

Develop, apply, and transfer technology.

Extension Goal And Roles:

- Accelerate the discovery and adoption of competitive, profitable technology.

- Develop interdisciplinary research and delivery methods and networks.

Issue 3.

Balance human wellness, nutrition, and environmental concerns with competitiveness and profitability goals.

Extension Goal And Roles:

- Educate consumers and producers about trade-offs in health and environmental aspects of food and fiber production, marketing, and processing.

- Provide education on the regulatory process and facilitate understanding of regulations through educational programs.

Issue 4.

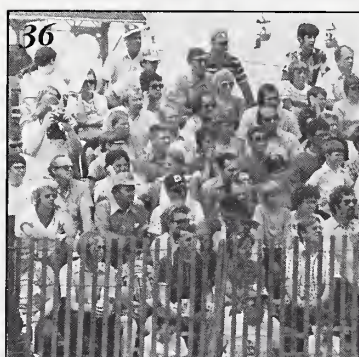
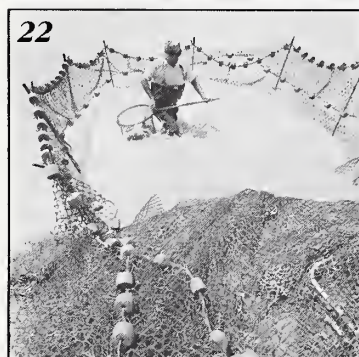
Acquire timely, accurate information and education to adjust profitably to global changes in supply and demand.

Extension Goal And Roles:

- Help producers understand the global market environment and obtain and interpret data for long-run decisions.

- Teach producers strategic planning.

- Assist producer groups and organizations in making institutional changes necessitated by changing markets.



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Change Is The Watchword

4 Extension Review

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The Cooperative Extension System, like all private and public organizations, is facing change which is more extensive, more far-reaching in its implications, and more fundamental in transforming programs than anything previously in Extension history. This change has ushered in an era in which public and private organizations must learn to operate in a new mode.

Last year alone, 4,000 business organizations, not including farmers and ranchers, were making the necessary adjustments to remain viable in this new environment, at a cost of \$200 billion. Over half the Fortune 1000 companies have been involved in this process since 1980.

The Cooperative Extension System must develop and implement plans for change. Or, we will experience the cultural shock that occurs to organizations when the critical mass of change exceeds their ability to assimilate it.

Are our current mission, size and mix of staff, organizational structure, ways of approaching our tasks, and perhaps some of the basic tasks themselves, appropriate to the new times and environment?

The real world is rapidly losing interest in elegant solutions to finite, individual problems. People want worthwhile products and services, the development of which usually requires a multitude of skills and a high degree of flexibility. Managing Extension programs which can successfully market educational products in the future means tackling real problems that often can barely be defined.

Recognizing what the world wants, assembling the resources needed to produce it, and orchestrating those resources so that they all work toward solving the real problems are tasks critical to how the Cooperative Extension System will meet clientele needs. Completing such tasks amidst uncertainty and competition is especially challenging. Yet doing so constitutes the System's current agenda, and it is why Extension administrators across this Nation are cooperating in a National Initiatives effort.

The Competitiveness And Profitability Initiative

In the past, farmers and ranchers competed primarily with neighbors or with producers in another state. The global economic environment was fairly stable despite two world wars and the worst global economic collapse in modern history. U.S. monetary and fiscal policy had little impact on agriculture; farmers were protected with fixed prices for the major commodities and income transfers from the government. Helping farmers compete meant helping them adopt the latest in new production technology. If resulting increased production was not enough, farmers had government programs as a safety net. This explains in part why we have such a strong technology bias in our Extension programs. Today's

world could not be more different. Extension and the land-grant system must keep pace with this change to be relevant to the future competitiveness and profitability of American agriculture.

Wealth in U.S. agriculture has dropped drastically. Many rural Americans are undergoing an extremely disruptive process. When this period of transition is behind us—within the next 5 years—we will have lost 10 to 15 percent of existing farm families because of financial failure. Nearly three times that number will have struggled with economic problems and the human stress that accompanies lost dreams.

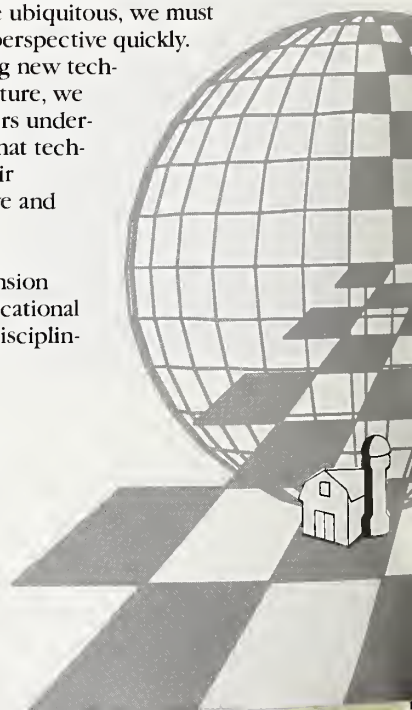
Those remaining in agriculture must sustain long-term profitability for their farms and ranches and regard agriculture as a business rather than a way of life. This challenge is the essence of the National Initiative on Competitiveness and Profitability of American Agriculture. Extension programs in most states are being redirected toward an emphasis of helping farmers improve long-range competitiveness and profitability. As states move to this type of issue-based programming, they are reallocating resources to reach more clientele than before with programs that concentrate on solving problems.

Role Of Technology

Technology can be American agriculture's wild card of the future. Current technology, new technology, and, particularly, biotechnology will give a powerful comparative advantage and competitive edge to those who can apply these advances profitably. Thus, cost-benefit assessments must be made to determine the feasibility of technological changes.

A global economy demands from us a global perspective in our educational materials and programs. In an environment of fierce and often predatory competition where information and technology are ubiquitous, we must obtain this global perspective quickly. Besides introducing new technology into agriculture, we must help producers understand how to use that technology to keep their systems competitive and profitable.

Traditionally, Extension has conducted educational programs using a disciplinary approach.



This method of delivery was often confusing because the information and technology delivered were seldom in economic terms, were not integrated, and did not focus on profitability. Today, competitiveness and profitability needs of American agriculture demand that Extension use an integrated systems approach based on a profitability plan for producers. Producers must make economic comparisons and cost-benefit assessments of systems approaches. At the same time our natural resource base and environmental quality must be maintained.

Many of the technological tools essential for maintaining competitiveness and profitability of American agriculture are changing considerably, especially those used to control plant and animal pests. Thus, sustainability of agricultural competitiveness and profitability depends on a time-honored Extension approach, which involves safe and judicious use of these technologies.

Market Strategy Essential

Marketing is essential to agricultural competitiveness and profitability. Thus, the Extension National Initiative in this area must concentrate on market planning strategies which include a clear understanding of international trade and foreign markets. Policy factors are now as important as basic resource endowments in determining competitiveness and profitability of American agriculture. Thus, public policy educational programs must be integrated with production management, financial management, and marketing programs to address competitiveness and profitability issues. Also, producers must better understand risks and the assessment of risktaking in production, marketing, and business management decisions.

A rapid delivery network is vital in interdisciplinary integrated efforts. Database support is necessary for integrated systems approaches to problemsolving. Communication linkages between databases and real-time information are vital for production, marketing, and management decision-aid programs to function through integrated software. It may be more crucial for Extension to develop an informational management system to manage known technology than

to develop additional technological information, if it cannot be used effectively to enhance profits.

An extremely important component of interdisciplinary, integrated educational program delivery is teamwork. Thus, team efforts must be recognized and rewarded as part of the systems approach to problemsolving.

The Future

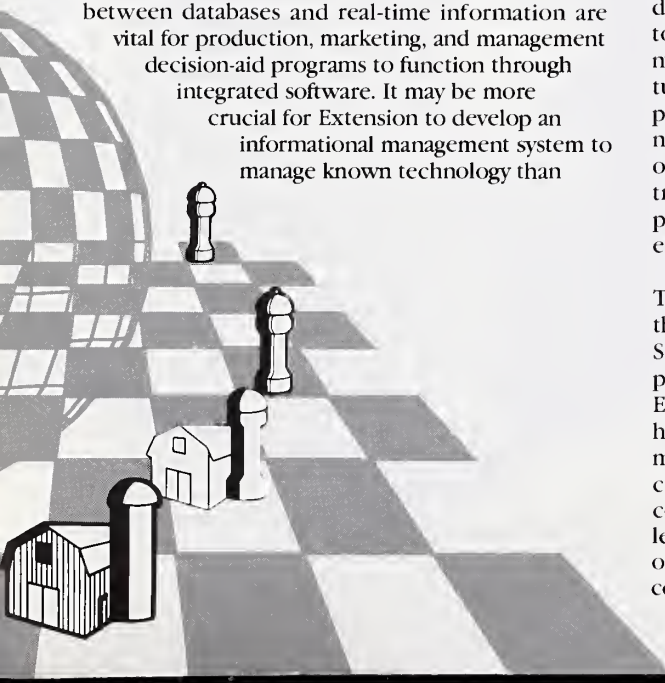
Some argue that worldwide growth in agricultural production has finally set the age-old problem of food shortages behind us. Where food shortages exist, they say, misguided policies, inadequate food distribution systems or poverty are to blame and the capacity to feed the world now and in the future is adequate. Others argue that our apparent excess production capacity stems from the exploiting of fragile resources, and that marginal soil, water or climate resources cannot sustain production indefinitely. Because the world population will continue to grow, and global improvements in personal income will shift the demand for food, food shortages or rising real prices in food and fiber will recur.

Both of these futures or some combination of them are possible. In the seventies, we could not produce enough. In the eighties, we do not know what to do with what we have. During both periods, the phrase "never again" was used with some conviction. Never again would surplus conditions exist. Never again would we face inadequate food supplies. The stock and trade of Extension is providing our clientele with effective decisionmaking tools. These tools must work independent of the job. Thus, we must develop strategies that are appropriate, whatever the future.

Flexibility The Key

A competitive and profitable agriculture will depend on flexibility—on our ability to respond to an uncertain and rapidly changing environment. This means we must learn to view agriculture as a system. We cannot be "smart in the parts" and "dumb in the whole." Competitiveness and profitability of agriculture will depend on the ability of Extension, research, and industry to use integrated systems approaches to problemsolving and to incorporate policy effectively into the decisionmaking process.

The National Extension Initiatives effort provides the environment for the Cooperative Extension System to evolve toward a more effective process of problemsolving than in the past. Extension staff at all levels of the System will have to take more risks, cooperate with all segments of the agriculture community and other clientele groups, develop coalitions, overcome constraints, and make things happen. Extension leadership systemwide needs the active support of all Extension employees for this effort to succeed. ▲



Extension National Initiative: Competitiveness And Profitability Of American Agriculture

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The roots of the financial problems of farmers today can be traced to the environment of the seventies and the dramatic changes in that environment early in the eighties. The seventies can be characterized by high inflation rates, growing foreign and domestic demand for farm products, and low or negative real rates of interest. Farmers, willing to substitute asset appreciation for current earnings, borrowed heavily to purchase capital inputs and farmland to expand their operations. Then, in the eighties, interest rates rose to unprecedented high levels, and foreign and domestic demand for farm commodities declined significantly because of worldwide recession. Farm incomes dropped dramatically, and land values began a steady and relatively steep decline. Farmers with high debt loads found it difficult to service that debt with high interest rates, low incomes, and decreasing land values.

Extension Resources Redirected

Extension Industry Resource Committees, established by ES-USDA and the Extension Committee on Organization and Policy (ECOP), raised the issue of profitability and the likelihood of an impending financial problem in American agriculture. Early in the eighties, profitability became the overriding goal of all Extension Agriculture and Natural Resource programs and a budget priority for ES-USDA and ECOP.

By 1984, up to 35 percent of Extension resources in some states had been redirected from other programs to address the farm financial crisis. Also, the Congress, in the FY 85 appropriation, provided \$1 million in special funding for ES to provide assistance to financially distressed farm families. These funds went for immediate program implementation of 21 out of 46 project proposals submitted by state Extension services.

To implement these programs, these institutions committed \$7.23 million of State and local funds. The Congress provided \$1.4 million for similar project funding in the FY 86 and FY 87 budget.

Intensive assistance provided by the Cooperative Extension System has helped a vast number of farm families deal with financial crisis. Nevertheless, about 25 to 30 percent of farmers remain in financial difficulty. They account for 50 percent of all outstanding debts. The income surge of 1986 and 1987 left this group of farmers relatively untouched, and they will continue to need Extension's assistance.

Systems Approach The Key

In 1984, ECOP published, "Regaining Farm Profitability in America: A Cooperative Extension System Response." This report contained the policy that "The Cooperative Extension System will develop a total production systems approach to improve the profitability of agriculture by striving for maximum economic returns not maximum output." This policy provides the basis for Extension to take the initiative in addressing sustained long-term profitability of American agriculture.

In 1985, ES-USDA funded a cooperative agreement with Oklahoma State University for a feasibility study. Its purpose was to examine how the Cooperative Extension System might implement a total systems approach to improve agricultural profitability. This report concluded that Extension programs to increase agriculture profitability are feasible and provide examples of such programs. The report also concluded that Extension must expand the development and implementation of these types of programs even though there were major constraints in the programming process.

A National Initiative Developed

Based on this feasibility study, ES-USDA and ECOP convened a national work group in July 1986 to draft a plan of action and implementation schedule for an Extension National Initiative to Increase Profitability of farmers and ranchers. The plan of action and implementation schedule developed were approved in August 1986. In December, ES-USDA and ECOP incorporated this initiative with seven others, and the Cooperative Extension System embarked on a national initiatives effort. The intent is to concentrate resources on issues critical to the economic and social progress of CES publics. This effort emphasizes efficiency, accountability, and clarity of mission.

When the eight priority initiatives were identified, Competitiveness and Profitability of American Agriculture evolved as the title for the national initiative to address the economic problems and opportunities of agriculture. After the priority initiatives were established, eight multidisciplinary task forces composed of Extension staff nationwide were appointed to develop each initiative.

Task Force Addresses the Issue

The National Extension Task Force on Competitiveness and Profitability of American Agriculture met for the first time on December 16, 1986. Task Force members approved a National Forum which would involve a broad spectrum of the agriculture community in a process of identifying issues constraining agriculture competitiveness and profitability. This Forum, held February 17-19, 1987 in Washington, D.C. (see article on page 10 of this issue), provided the Task Force with a set of credible issues on which to develop a national initiative. Forum proceedings have been distributed to Forum participants, Extension directors, state

agriculture program leaders, and state competitiveness and profitability contacts who are helping implement this national initiative. The Task Force has also distributed a 27- and a 7-minute video of the Forum for state use.

Other products initiated and distributed by the Task Force are (1) a white paper on competitiveness and profitability issues, educational objectives, target audiences, potential linkages, programs and needed support and (2) a national assessment of Extension efforts to increase profitability of farms and ranches through integrated production, financial management, and marketing programs (also reported on page 8 of this issue).

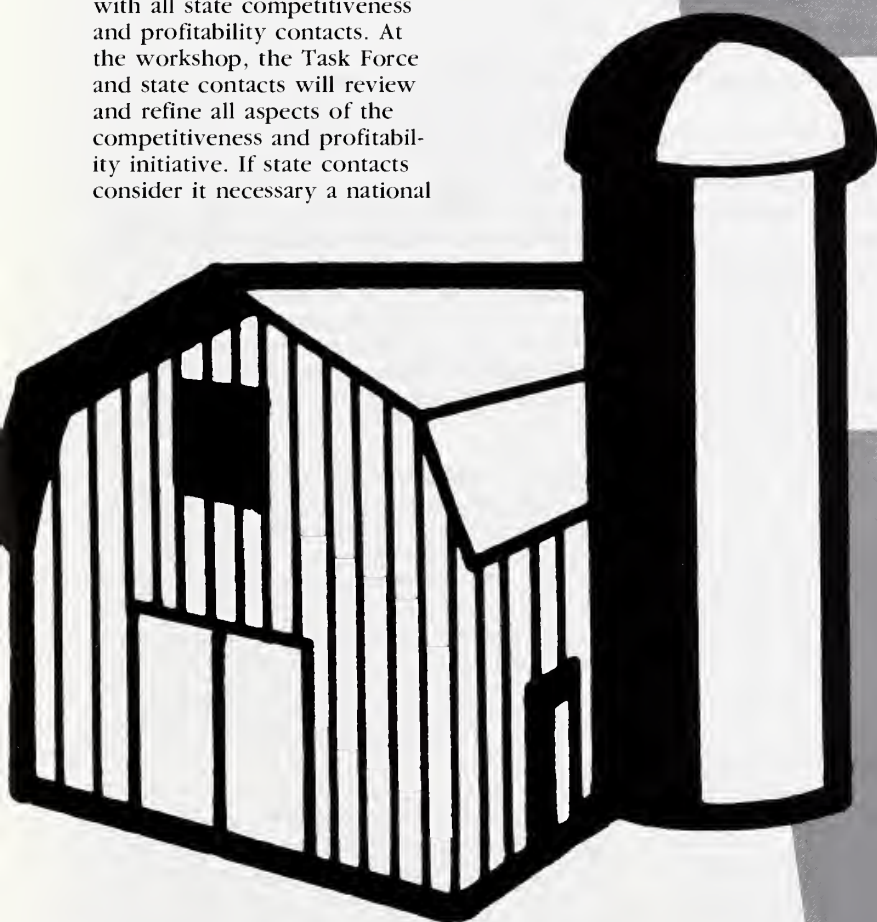
Future Plans

In March 8-10, 1988, the Task Force will hold a workshop with all state competitiveness and profitability contacts. At the workshop, the Task Force and state contacts will review and refine all aspects of the competitiveness and profitability initiative. If state contacts consider it necessary a national

satellite program could be held to further extend this effort to the Cooperative Extension System and clientele groups.

To make the Extension National Initiative on Competitiveness and Profitability of American Agriculture work, the Cooperative Extension System must function as a system in cooperation with research and industry. It is a futile notion to think change can be made without commitment from the people who must be involved in implementing it. Thus, the Task Force is committed to involving

a broad spectrum of the Cooperative Extension System and clientele groups in this process. Only such a wide confluence of effort can ensure success. ▲



Improving Profitability Through Integrated Systems Programs

8 Extension Review

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Competitiveness and profitability of American agriculture have become major concerns and the targets for a national initiative for future work of the Cooperative Extension System (CES). Over the next 4 years, the System plans to commit 36 percent of its resources toward addressing competitiveness and profitability. The Extension Committee on Organization and Policy (ECOP) in 1984 stated that a key educational method of the CES is the integration of production, financial management, and marketing programs to help agricultural producers achieve maximum economic returns.

Interdisciplinary Problemsolving

This approach to Extension education requires the resources of a team of specialists and agents who interact closely during program development and delivery. They assure that the recommendations are complementary and lead to accomplishing the objectives of the farmer or rancher. Issues such as declining agricultural profitability and competitiveness are not confined to disciplinary boundaries, but require interdisciplinary problemsolving. The traditional disciplinary or component approach to Extension education has been largely inadequate in dealing with the many interrelated aspects of the current agricultural crisis. Through an integrated systems approach, Extension educational programs will likely address more effectively than before the circumstances and objectives of farmers and ranchers.

In 1985, ES-USDA funded a cooperative agreement with Oklahoma State University to study the feasibility of conducting such programs. That study identified several programs across the United States and outlined some of the considerations in implementing them. Subsequently, ES provided funding to the Texas Agricultural Extension Service (TAEX) to conduct a broader scale assessment of current Extension programs which have implemented such an integrated approach. A report available from TAEX presents the results of that assessment, and this article gives the major findings and recommendations.

TAEX Goal: Assessment

The overall purpose of the TAEX project was to develop and conduct a national assessment of current Extension programs employing integrated systems approaches to agricultural production, financial management, and marketing. The specific objectives were as follows:

1. Describe and analyze CES current efforts to improve the efficiency and profitability of farm enterprises through a systems approach combining production, financial management, and marketing.
2. Analyze the process through which current multiple-component integrated programs have been developed and implemented.

3. Identify alternative strategies for implementing integrated production, financial management, and marketing programs within the CES.

Study Sources

Information used in assembling the report was obtained from three major sources. An extensive literature review provided background information on systems approaches and current issues in interdisciplinary programming. We included references on standard readings on systems theory and agricultural systems analysis, international experiences with farming systems research and Extension, interdisciplinary efforts in agricultural research, CES accomplishment reports (NARS), and state Extension service plans of work.

Two questionnaires provided the basis for a statistical description of current integrated systems programs. The first questionnaire was sent to agriculture and natural resource program leaders in all states and territories. These leaders identified programs which they felt met the general description of integrated systems programs. A second, more indepth, questionnaire was mailed to contact persons for these programs, and about 60 percent provided usable responses.

Finally, a multidisciplinary team of specialists from TAEX visited 10 states to obtain qualitative information on program philosophy, problems encountered in implementing integrated programs, and methods used to deal with those problems. States visited were California, Washington, Idaho, Michigan, Minnesota, Illinois, Nebraska, Mississippi, Virginia, and New York.

The report includes a description of the programs, factors affecting program implementation, organizational support of the programs, rewards and incentives needed to encourage such efforts, and factors influencing team interaction and coordination.

Findings From The Study

- Interdisciplinary work depends on the identification of a "real" problem facing Extension's clientele. All who work toward resolving this problem must perceive it as having major significance for the well-being of the clientele, and understand what role they play in helping to resolve it.
- Regardless of how an interdisciplinary group is initiated, its members must be free to elect to participate.
- People with allocated time and with a commitment to conduct integrated work are the cornerstones of integrated efforts in Extension.
- Flexible organizational structures and commitment of administrators are essential to the wider incorporation of integrated programming.



- The process of program startup requires substantial time and communication to establish agreed-on priorities and procedures.

- Physical co-location, while desirable, is not so important to integrated programming success as is effective, continual communication among group members.

- Skill in interpersonal relations and team processes is as important to interdisciplinary team success as is professional competence.

- Dynamic leadership is needed to integrate multiple perspectives, to coordinate team activities, and to promote the team, not individual accomplishments.

- Merit based on individual achievement and the departmental orientation of the university system discourage integrated teamwork.

While interdisciplinary work is appropriate for many problems faced by agricultural producers, the need for good, effective disciplinary work remains.

Recommendations For The Future

- Extension staff and clientele must understand the value of integrated systems programs as indicated by the linkages and interactions which exist in agricultural production systems. This requires training in the concepts and procedures of interdisciplinary and systems programming. Likewise, increased effort is needed to clarify terminology. Otherwise, the potential of integrated systems programming in having an identified impact on agricultural profitability is diluted, as any and all related work become identified as integrated programs.

- Given the importance of identifying a "real" problem, Extension agents and specialists must develop cost-effective methods for generating and maintaining local databases.

- Extension administrators should inform clientele of the usefulness of a systems approach. Further, they should provide the environment for and encourage Extension staff to participate in systems-oriented programming efforts.

- Research administrators should recognize the value of interdisciplinary work in addressing and solving agricultural producer needs and problems. They should restructure rewards and incentives to encourage such efforts.

- Wherever possible, Extension staff in field centers should be encouraged to form interdisciplinary teams to address broad-based problems. Campus-based specialists must help to backstop these decentralized efforts.

- To facilitate successful program implementation, Extension and research administrators must provide interested team members sufficient release time from other obligations and give them adequate financial resources. Integrated systems efforts need to be viewed as credible, important undertakings and not be tacked on to existing workloads.

- Agricultural researchers and Extension specialists must expand their work to identifying and quantifying linkages among commodities, factors of production, financial resources, and markets. Information on these linkages is essential if agricultural producers are to make decisions which lead to profitability.

- Land-grant universities must prepare graduates to face a complex agricultural environment. Teaching administrators should examine curricula and learning experiences of students to determine those steps required to provide graduates with a broad perspective and appreciation of interactions within agricultural production systems.

- Extension and research administrators should increase efforts to establish innovative organizational liaisons which lead to more effective collaborative work.

- The Extension Service should develop a set of training/resource materials, which 11 individual states could adapt, with the following topics: (1) systems thinking for regaining agricultural profitability; (2) interdisciplinary programming— aspects and procedures; (3) effective teamwork; (4) participatory leadership of integrated programs; (5) identification and articulation of problems; and (6) local database generation. While training is not a panacea, the orientation of Extension staff and producers to such perspectives would seemingly facilitate a more widespread and effective application of integrated systems programs.

For Success

After completion of the study, it is clear that dedicated people, with time, can overcome most barriers—even those involving interdisciplinary endeavors. It is also clear that, depending upon people's talents and local circumstances, many structures and procedures can be used to implement integrated systems programs. However, as the Cooperative Extension System seeks to institutionalize cross-disciplinary programs, the study findings should be considered. Only by viewing agriculture from a systems perspective can the Cooperative Extension System effectively respond to the needs of farmers and ranchers who are confronted with a rapidly changing environment. ▲



National Forum Identifies Key Issues Affecting Competitiveness And Profitability

10 Extension Review

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Over 100 leaders of the Nation's agricultural community worked intensively during 3 days last February to achieve consensus on the top issues affecting agricultural competitiveness and profitability today. They thus accomplished their main task at the national forum held February 17-19, 1987, in Washington, D.C. The National Extension Initiatives Task Force on Competitiveness and Profitability conceived of and conducted the forum. One of eight task forces organized in 1986 by the Extension Committee on Organization and Policy, the 17-member group is composed largely of individuals from various states who represent Extension leadership in competitiveness and profitability.

Learn Key Issues

Extension's intent in holding the forum, as stated, was to learn what a broad spectrum of the agricultural community sees as key issues within competitiveness and profitability. This exercise has, as planned, laid the groundwork for fleshing out the Extension initiative on competitiveness and profitability, how it would be addressed through Extension programs and agricultural sector leadership. During the forum, small-group facilitators encouraged participants to visualize how the strengths of Extension and the agricultural community might together be used to solve problems and realize opportunities involving competitiveness and profitability of American agriculture.

Specific objectives included:

1. Surface and define key issues constraining agricultural competitiveness and profitability.
2. Identify roles that Extension and other segments of the agricultural community will play in addressing these issues.
3. Determine actions needed by Extension to implement a National Initiative on Competitiveness and Profitability of American Agriculture.

Schuh Sets Stage

The stage for group interaction during the forum was set at the opening dinner on February 17, by Ed Schuh, director for agriculture and rural development with the World Bank. In his key-note, Schuh gave a "new agenda for Extension." He emphasized that while Extension is still strong in helping farmers adopt new technology, the world situation has changed and farmers now compete in international markets. Cooperative Extension must change with these changing global conditions or it is doomed, he said. "The public won't support it (Extension) if it is not relevant to their needs."

According to Schuh, Cooperative Extension must include in its new agenda the following: new environment for international trade, human capital, and competitiveness; new perspective on

rural development; and broader perspective on public affairs. "A major educational effort is needed on international trade," Schuh elaborated. "It is probably the most neglected and most poorly understood issue today. It affects our domestic programs, value of the dollar, our interdependence, and our balance of payments."

Competitive Strategy Needed

Extension also needs to help farmers understand the technology they compete against in other countries so they can devise competitive strategies.

"Improving agricultural profitability is a matter of national security and power," Schuh stated. "Agriculture is still the only world-class industry this nation has. Extension must seize the opportunity and lead the way to change that will keep U.S. agriculture strong."

The next morning, participants heard presentations on three broad areas: monetary, fiscal, and trade policy; marketing and domestic agricultural policy; and production, marketing, and farm financial management. Participants then, within small groups, delineated and ranked issues within these three areas as they related to competitiveness and profitability.

Because of the involvement of a broad representation of the agricultural community, these issues are seen as firmly entrenched throughout American agriculture. Commenting on their breadth and degree of relevance, Vivan Jennings, deputy administrator for agricultural programs, ES-USDA, said: "The Extension Service will focus its efforts on educational programs to address them. The agricultural community has identified these issues as being of foremost importance in restoring the competitiveness and profitability of our farmers and ranchers," Jennings stated. "Through this involvement of people, we feel confident that the critical needs have been identified. We will be focusing on them through the Cooperative Extension System. We believe states can use these issues as guides to address specific concerns within their own boundaries."

Total Systems Approach

Taskforce cochairs Walter Walla of the Texas Agricultural Extension Service and Dixon Hubbard of ES-USDA emphasized the importance of a total systems approach to handling the difficulties currently besetting this Nation's agricultural industry.



Ed Schub, director for agriculture and rural development with the World Bank, delivers keynote address at the National Forum, conducted by the National Extension Initiatives Task Force on Competitiveness and Profitability, and held February 17-19, 1987, in Washington, D.C. At these meetings, agricultural leaders identified today's top issues affecting competitiveness and profitability.

"American farmers must be competitive in a global economy, and U.S. production and marketing systems must be economically efficient," they state. "There must be further development and dissemination of new technology, and educational programs in production and financial management, marketing, and public policy must be integrated and targeted toward competitiveness and profitability."

Nine Issues

The 500 issues that surfaced initially were narrowed to nine, again through intensive small-group work. The nine issues are:

- Improve the economic efficiency and integration of the total agricultural system from producer to consumer.
- Develop, apply, and transfer technology.
- Balance human wellness, nutrition, and environmental concerns with competitiveness and profitability goals.
- Acquire timely, accurate information and education to adjust profitably to global changes in supply and demand.
- Strengthen business and community support systems.
- Develop long-term agricultural policy that integrates the economic and social needs of the Nation within the global economic system.
- Develop U.S. fiscal, monetary, and trade policies that are consistent with international agricultural trade goals.
- Integrate marketing strategies into the production management system.
- Enhance the supply of competent human resources in the agricultural system.

Task Force Plan

Based on input from forum participants and other clientele groups, the National Extension Initiatives Task Force on Competitiveness and Profitability has developed a plan which includes guidelines for national, state, and local programs to address the issues surfaced at the forum. For the initiative's goals to be achieved, enthusiastic support is needed at the state and county level. Many states (and counties) have already introduced or redirected programs relating to the initiative.

Links With Other Initiatives

Many linkages and interfaces exist between competitiveness and profitability and the other Extension initiatives. Initiative administrative advisors will have to ensure that these linkages and interfaces are recognized and addressed as other initiatives task forces develop program guidelines. The purpose of the national initiatives is to break with traditional programming and to increase Extension's ability to solve real problems. The initiatives are not intended to increase competition between and among disciplines or program areas.

The nine major issues that surfaced at the Forum for the Agricultural Competitiveness and Profitability Initiative make up the bulk of articles in this issue of Extension Review. Authors throughout the Cooperative Extension System look at how programming within each of the issues is addressing the needs of our clientele systemwide. Those of us attending the forum came away enthusiastic that tremendous need exists for Extension expertise in new, exciting ways. We have a mandate. Creative, challenging work awaits each of us, and it will demand our most innovative insights and thoughtful program solutions. *A*

Marketing—A Window To Success

12 Extension Review

Jerry Dyer
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The roar of a diesel engine and the whine and whir of a forklift are music to Bill Witherspoon's ears. The clatter and clank of a processing line become symphonic. Combined, they are not a cacophony of harsh, mechanical clamor. They become both the sound of music...and the sound of money.

Above the din of men and machines sorting and shipping cucumbers at the Produce Market Association packing, grading, and shipping facility, Witherspoon roars out an explanation: "This is June and so far we've shipped 60 tractor-trailer loads of cabbage and the cucumber trucks are starting to back up to the loading docks. Later, it will be bell peppers, squash, and melons.

"Listen to that truck pulling out under that heavy load headed for Miami, New York City, Canada, and wherever! Man, that's the sound of money. Money for our farmers. It's a sweet sound!"

Alternative Crops

Witherspoon, director of Clemson University's Extension Service for Horry County in northeastern South Carolina, beams through weary eyes. For the past 5 years, he has assisted in bringing farmers together with a multitude of political entities—packagers, processors, shippers, and buyers—to make vegetable growing a reliable agricultural alternative to the traditional row crops, especially flue-cured tobacco.

"Tobacco will always be the mainstay of our farmers here," he says, "but its acreage has fallen under quota control from 35,000 acres in 1940 to 11,000 acres in 1987. And we've gone from 2,300 farms in 1980 to less than 1,700 this year.

"Couple these figures with the fact that most of our farms average only 110 acres and the problem is obvious: how do they produce for a profit on such a small scale?"

Alternate crops such as vegetables were seen by some as a quick fix. However, Witherspoon and other Clemson Extension officials urged caution.

Marketing—A First Step

"Vegetable production wasn't new to us, but marketing was," Witherspoon says. "We had to tell farmers that if they were going to try to grow vegetables like grandpa, then forget it. They've got to have irrigation, a labor force, proper harvesting, and most important...a market."

That meant Extension coordination with Horry County's elected council—men and women who committed funds to the market association facility. Under the guidelines, the produce delivered there is cleaned, graded, packed, and shipped to market. Farmers are paid only after what they deliver to the facility is received and sold to a buyer.

William D. Witherspoon, director of Extension for Horry County, northeastern South Carolina, examines cabbages (opposite) and cucumbers (right) at the Produce Market Association. Extension is helping vegetable growers to understand the "market window" aspect of production.

Photograph courtesy of Clemson University, Clemson, South Carolina.





During the process, Extension provided assistance in upgrading the quality of the vegetables, production and harvesting practices, and budget planning advice.

"We flat out had to tell some farmers who were in financial difficulties," Witherspoon relates, "that they'd be in worse trouble if they tried to get into vegetables. Some saw it as a way out of their problems after they experienced row crop failures. You can't operate that way in vegetables."

Production Possibilities

Many did not understand the "market window" aspect of vegetable production; the grower's knowledge of when to sell produce in his/her locale. "We've had folks who just started growing all manner of vegetables without the understanding that the buyers for bell peppers were taking everything Georgia had in May but could care less about what a fellow or two had up here in South Carolina," Witherspoon says. "That's changing. The lack of sales can really get a farmer's attention.

"Currently, we've got a contract for more than a half million pounds of chipping potatoes. We're growing and feeling the pains, learning from mistakes and picking the brains of our colleagues in other states.

"We have the soils, good climate, and location on the east coast that provides an opportunity for continued growth," Witherspoon says. "Most important, however, we have a good group of farmers who are adaptable to change. And we have a political structure ready and willing to give our farmers an opportunity to make the kind of money that will benefit the entire community." ▲

Total Beef Program In Idaho

14 Extension Review

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Hereford cattle drink from a farm pond adjacent to their permanent pasture. Producers involved in Idaho's Total Beef Program (ITBP) are reaping the benefits of a "down-to-earth" cooperative educational thrust aimed at returning the state's beef industry to a competitive position in the food marketplace.

*Photograph courtesy of the
Soil Conservation Service,
USDA.*



Idaho beef producers involved in Idaho's Total Beef Program (ITBP) can credit well over \$2.5 million annually in returns to participation in that program. As of March 1987, 27 of Idaho's counties, 27 Extension agents, and 157 beef producers on county committees were involved in the Total Beef Program. Also participating were 26 veterinarians and 16 agricultural lenders, two veterinary colleges, two other government agencies, and 12 allied industrial representatives of companies with products. Of Idaho ranches, 39 are "project" cooperating ranches representing 54 families.

What Is ITBP?

What is the Idaho Total Beef Program? One Idaho banker calls it a "common sense, basic down-to-earth get-your-act-together approach that we can recommend." An industry representative calls ITBP "a great step in the right direction that will help the beef industry get back into a competitive position in the food marketplace." ITBP is a cooperative educational thrust responsive to needs of Idaho beef producers. Since 1984, its launch date, ITBP has been operated to fit

priorities of the state's beef cattle industry for the benefit of producers. Project longevity ranges from 1 to 5 years, each aimed at particular problems throughout the state.

Priorities are established by county advisory committees composed of producers, veterinarians, bankers, allied industry representatives, Extension, and research. The state Integrated Resource Management (IRM)-Total Beef Program committee acts as an umbrella group to direct funding and work with the county committees. IRM is a total systems approach to problemsolving while ITBP is the program itself. The overview committee does not decide on projects. Members listen to what the producer describes as the problem and provide advice and information. The producer controls the program.

Economic Benefits Uppermost

The entire thrust of the Idaho Total Beef Program is to provide economic benefit to Idaho livestock beef producers. For example, the goal of a given IRM demonstration may be to measure growth response following parasite control in yearlings. The final report on

the trial will show any increase in weight. The evaluation of the success of the technique or product will depend on whether that product made the producer money. If the technique or product was not cost effective, any production increase was insignificant.

Tangible Results the Key

The aims of ITBP are tangible results—four key indicators: more rapid growth of animals, fewer "open" cows, shorter calving season, and reduced calf losses. All of these lead to improved efficiency, optimum production, and increased profitability. For each of these four key indicators there are four key causes of variation—nutrition, disease, reproductive soundness, and management.

Once a key cause is isolated, a key change can be determined, initiated, and measured against the base data for results.

Pegram and Boise River

Success of the ITBP has been demonstrated in two completed projects—Pegram and Boise River. In the Pegram project, the key indicator, baby calf loss, dropped from 26 to 2 percent between 1977 and 1979. In the 1980 to 1982 Boise River Project, a key change in

management—improved nutrition—reduced the number of “open” cows from 23 to 7 percent and decreased calf losses from 7 to 1/2 percent. It shortened the calving season from 140 to 60 days, and increased growth in heifers by 87 pounds and in steers by 60 pounds.

The following example of a typical producer in an IRM project shows likely benefits. This producer, who runs 350 mother cows and 350 yearlings, used management techniques that the ITBP has worked on for the last 3 years.

The first year, the producer identified eight subfertile bulls and three of them were infected with *Trichomoniasis*. These problems might have cost him 87 calves over the next 3 years, or \$30,000.

He increased calf survival with shelters, better nutrition, and closer attention at calving time. His calf death loss dropped 7 percent, or 72 calves, over the next 3 years, or \$25,000.

He initiated a parasite control program and a trace element supplementation program. These practices resulted in a 47-pound increase in yearling weights, or 14,000 more pounds of marketable product, which is \$8,400. Total gross benefits for all changes would be \$63,400.

The cost of making these management changes—including fertility examinations, materials for calf shelters, and de-worming medication for 3 years—totalled \$8,700. Net economic benefit to this producer is \$54,700. Net return per year is \$18,250, and net return per cow per year is \$52.14.

This example does not use exact slaughter prices and replacement costs. However, it shows the tremendous potential that IRM, with ITBP techniques, has to offer the beef cattle industry.

In 1985 and 1986, funding for ITBP projects totalled \$181,100. Of this total, \$40,000 was provided by the Idaho Beef Council, \$42,500 by Extension Service-USDA, and \$98,600 in “in-kind” contributions for services or products by counties, allied industry, and the University of Idaho College of Agriculture. Some funds were made available for county demonstrations, which takes some risk from the producers and gives some control to the county and state committee. Sharing resources in this way fits in with priorities of the Idaho Beef Council and the Idaho beef cattle industry. Their goal is to get information into the field and see technology adopted that will improve the efficiency of beef production.

ITBP began when the Idaho Beef Council decided to determine the true problems of the Idaho beef industry. The state’s total Beef Committee, made up of representatives appointed from beef producers, the Idaho Veterinary Medicine Association (IVMA), agricultural lenders, allied industries, and the University of Idaho College of Agriculture, met to develop a course of action. Cochairs of the committee are the president of the IVMA, Jack Walker, and the director of Idaho Cooperative Extension, Harry Guenther. Committee members, lacking data to back up their opinions, decided a statewide survey of producers was needed.


Survey Shows Needs

The county committees conducted the survey within the time schedule of 6 weeks. Extension facilitated this process and compiled the data. Statewide problems were identified and lines of action developed. The survey found that producers had not kept records, which made it difficult, if not impossible, to

determine what problems had been over time. In 1984, to remedy this situation, the Idaho Beef Council compiled and introduced the first pocket recordbook for producers. (Several other states have now adopted use of these recordbooks.)

The state committee asked that project proposals for problems identified by counties be submitted by the county committee for funding by the state committee. The state committee formulated some guidelines for proposals. A number of these have been funded. As should be evident from this description, the Idaho Total Beef Program is problem oriented and directed with an integrated concept. The objective is always to work through the practicing veterinarian, producer, allied industry representative, and agricultural lender, and to bring in university specialists as necessary. ITBP is not a set program of activities. Its shape and direction depend on the particular problems identified by the producers in the state. By identifying their problems and working with Extension and others to develop appropriate programs, producers gain ownership in the process. They feel it is their own, not someone else’s program.

For more information on the Idaho Total Beef Program, consult *Cow-Calf Management Guide*, *Cattleman’s Library*, and the *Stocker-Feeder Management Guide*. Videotape programs and published reports are also available. You may also contact:

The Agricultural Communications Center
Ag Science Building, Room 10
University of Idaho,
Moscow, ID 83843
Phone: (208) 885-7982. 

IPM: An Extension Success Story

16 Extension Review

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Integrated pest management (IPM) is a contemporary success story. At least 30 million acres have come under the influence of this management philosophy, which nets farmers one-half billion dollars a year and has helped create a \$400 million IPM consultant industry. Thanks in part to a national impact study, the success of the Cooperative Extension System's integrated pest management program is now well documented.

IPM, an environmentally sound way of protecting crops from pests and diseases, has been part of educational programs in the Cooperative Extension System nationwide during the past 15 years. IPM is a method that integrates chemical, biological, and cultural practices with field scouting, and monitoring to optimize control of pests and diseases in crops and livestock. Chemicals are used only when conditions warrant rather than on a calendar basis. In other words, IPM substitutes good management for capital expenditures.

IPM is a relatively recent phenomenon. Late in the sixties, Secretary of Agriculture Clifford M. Hardin had encouraged pest control that "provided the least potential hazard to man, his animals, wildlife, and other components of the natural environment." This support led to research studies which developed a database on which Extension programs could be founded. Funding for studies of research on alternate pest control methods followed, not only from USDA, but also from the Environmental Protection Agency and the National Science Foundation.

Groundwork For IPM

Interestingly, the boll weevil, which prompted Seaman A. Knapp to develop the Extension concept, had been the focus of studies in the twenties that laid the groundwork for integrated pest management. Dwight Isley, professor of entomology at the University of Arkansas, studied the biology and ecology of the boll weevil and used this information to determine how many of the pests comprised a level dangerous to the crop. He developed monitoring and control techniques to use insecticides judiciously. As early as 1926, Isley had trained scouts to monitor insect populations in cotton fields. His work, however, was not widely used in many states from the forties to late in the sixties, because of general satisfaction with the success of scheduled applications of insecticides for boll weevil control.



Isley's principles re-emerged when Extension initiated two major pilot programs in 1971 on tobacco in North Carolina and cotton in Arizona. By 1978, many state Extension services had begun IPM projects. Some gathered data which showed that IPM was not only environmentally sound but a good economic move for farmers as well. By 1982, 53 land-grant colleges and universities had developed Extension IPM education projects.

Extension Survey Users

In 1983, USDA requested proposals for a study to measure the social, economic, and other effects of IPM on clientele groups. A team from Virginia Tech won the grant. This national assessment of IPM was conceived and partly funded by Extension Service-USDA, which provided overall advice and review. The Virginia Cooperation Extension Service led the 32-month study, whose objectives were to measure IPM's impacts on users (clientele), characteristics of users, and scope of resources used in IPM programs. Virginia Tech researchers gained information from Extension IPM staff, farmer clientele, and private pest management consultants. The study included three components, two of which involved all 50 states and 3 of the U.S. protectorates. The survey of Extension staff showed that formal IPM programs directly affiliated with Extension in 1984 existed on 27 million acres. These involved over 250,000 rural people and segments of 40 crop, urban, and livestock programs.

In the case studies, gross revenue and net returns were higher for IPM users than nonusers in all but one state, where no difference was shown. The better returns, however, were not consistently related to lower pesticide costs, as data on herbicides, insecticides, and other pesticides were grouped together. In four states, IPM users had higher pesticide costs than nonusers of IPM, but these were offset in economic returns by better yields.

High Returns

The 32-month-long study concluded that the \$48 million spent nationwide by the Federal Government to support IPM between 1973 and 1983 was yielding high returns for the agriculture industry. IPM users realized an increase in net returns of over \$578 million more per year than did those not using IPM. Private IPM consultants nationwide may be grossing over \$400 million a year working with many of these growers.

These figures probably understate the effect of IPM, based as they are on only a portion of the United States. Most states have IPM programs and some IPM principles are applied on acreages outside of formal IPM programs.

Integrated Approach Necessary

"The interdisciplinary approach to IPM is the only way farmers can deal with the combined problems of various pests which can be controlled with different options," states Myron D. Johnsrud, Extension Service Administrator. "All of these options have differing mixes of environmental and economic consequences. This integrated approach is necessary in today's information age and is the only way 'best management decisions' can be made."

"Beyond the obvious public benefits that the IPM programs have yielded," Johnsrud continues, "are the lessons we have learned about how to package interdisciplinary educational programs. We plan to put these to work in our ongoing educational programs as well as in those developed within our nationwide initiatives to address critical issues."

New Business From IPM

Most private IPM consultants surveyed began their services after 1980; 94 percent had started after 1970. Thirty percent of the firms employed former Extension employees and most consultants looked to Extension and land-grant universities for advice and information. Seventy percent of the firms surveyed did not consider themselves in competition with Cooperative Extension for clients.

"This report is going to open people's eyes at how much money can be made in the IPM consulting business," says William A. Allen, Extension entomologist and a pioneer of IPM in Virginia.

Valuable Spinoffs

"Development of a new service industry, agricultural consulting for IPM, has been a valuable spinoff from this Extension program," reports David McNeal, Jr., Extension Service national program leader for IPM. "Through pilot projects in various crop and livestock situations, Extension programs demonstrated the value of this service. Farmers recognized the value of the service, and private enterprise has begun to provide packages attractive to farmers and profitable for the agricultural consultants."

The Virginia Tech research team was headed by Edwin G. Rajotte, formerly Virginia Tech research associate and now assistant professor of entomology at The Pennsylvania State University. The report provides summarized data from case-study reports from California, Massachusetts, New York, Indiana, Texas, Mississippi, Georgia, Virginia, Kentucky, North Carolina, Maryland, Washington, Idaho, Oregon, Montana, and Nevada. ▲



An IPM scout (opposite) shakes insects onto a cloth for counting. At left, IPM scout uses a sweep net to determine insect population count. For 15 years, Integrated Pest Management, an environmentally sound method of protecting crops from pests and diseases, has been one of the most successful educational programs in the Cooperative Extension System nationwide.

Keeping The Farm Without Losing The Family

18 Extension Review

Susan Covington
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It's 4:45 a.m. She only has time for a cup of coffee and then, like the mail carrier, rain or shine, her job's long day begins. Unlike the mail carrier, who gets Sundays and holidays off, her job requires 17 hours of work every day, 365 days a year. After the early morning milking of 78 cows she must take care of the kids, house chores, keep the books, and provide support for her husband who's in the field harvesting crops to feed the cattle. She's a dairy farmer's wife fighting to keep the family farm alive.

In this case, her name is Vickie Kensinger, a dairy wife from Seymour who is located in the south central part of the state where 69 percent of all Missouri dairy goods are produced.

To recognize and support women like Kensinger in their various roles, Extension at the University of Missouri and Lincoln University recently created the Dairy Wives Institute, a day-long event jointly planned by Extension staff and area dairy wives.

From June 1986 to early 1987, six institutes were held on a rotating basis in Mountain Grove, Marshfield, and Lebanon, Missouri. A total of 180 women attended the first two meetings.

Advice: "Be Informed!"

On August 12, Kensinger joined 53 other southwest Missouri dairy wives for the first Marshfield meeting. Discussions covered the future of the dairy industry, how to stretch the "milk check," family communication techniques in stressful times, and quick and easy meal ideas.

Keynote speaker at the meeting was William Heffernan, Extension rural sociologist at the University of Missouri-Columbia. "Be informed," Heffernan told them. "Read and follow the farm press and follow what's happening to other agricultural commodities in the Midwest."

He stressed the importance of understanding regional marketing forces and warned his audience, "Never assume the system will survive without your input."

His warning caught Kensinger's attention. "He pointed out things I hadn't thought about — about the industry and where it's headed. There's been a question about where the family farm's going for quite a while—will it survive? I think our farm will survive because we're determined that that's what we're going to do."

Opposite: Jane Staiger, a Missouri dairy farm wife from Billings employs an Extension microcomputer program to assist in financial planning for the family farm. Below: Barbara Sears, dairy farm wife from Republic, Missouri, checks the farm's dairy calves in the early morning, the beginning of a long work day.



The Kensingers began dairy farming nine years ago. By the early '80s, they were in debt because the market value of their 300 acres and 200 head of cattle had depreciated \$150,000. With limited power to borrow, the Kensingers turned to University Extension for advice.

Ron Young, Extension area specialist, dairy, Ozark, Missouri, advised them to increase their herd.

This work-harder ethic was foiled by three federal tax increases imposed on dairy farmers in 1985. These taxes take approximately \$750 each month from the Kensinger's co-op check.

As members of the Mid-America Dairymen cooperative, the Kensingers are guaranteed a monthly check paying \$11.70 per hundredweight of milk. But the cost of this "stable" market is high. In addition to taxes, the Kensingers pay the co-op a monthly hauling charge of \$400. The co-op takes approximately \$95 per month for investment, a sum that is not returned to the farmer for 7 to 9 years.


Help From Computer Programs

In these troubled times, farm families are relying quite heavily on University Extension services, says Bobby Moser, Extension program director, agricultural programs, University of Missouri. "University Extension now offers 32 computer programs in financial planning," he points out.

The Kensingers plan to take advantage of these programs. "We're considering adding 100 acres," Vickie Kensinger says, "and the programs can compute interest rates and tell us how much they vary."

Vickie Kensinger considers Extension to be a one-of-a-kind resource for their business. "I don't think you can get help anywhere else like we've been given," she says. "An Extension specialist from Bolivar, Missouri, helped us make the right decision when we contemplated buying a silo. Extension is there to be used, and I don't think people use them enough."

Despite the constant battle to make ends meet in the dairy business, Vickie Kensinger says, "I don't mind coming out and milking the cows. It's my profession. I like what we do."

Extracted from an article in *Exclaimer*, a publication of University Extension, University of Missouri and Lincoln University. 



Enabling Crop Producers To Be Competitive

20 Extension Review

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In the early 1980s, many factors accounted for the depressed financial and income situations faced by Iowa farm families. Some of these factors relate to managerial ability, others lie beyond the control of the farm family. In crop production a major impediment to competitiveness and profitability is the failure to evaluate, adopt, and properly implement research-based crop production information, technology, and sound business management practices.

Extension area crop production specialists at Iowa State noted that during a critical period, when production efficiency was a requisite for survival, many crop producers were not evaluating the economic benefits and risks of each crop production practice. Extension specialists in crop production and protection also identified a problem in the decisionmaking framework of crop producers—priority setting.

"Because profitability had not been a problem in previous years, crop producers were not using information available to them," says Regis Voss, Subject-Matter Leader for Agronomy Extension, Iowa State University. "The producers were not considering alternatives for each production practice. They did not assess needs and assign priorities for production inputs."

An awareness that crop producers' problems were intensifying became evident at the twice-a-year inservice training sessions.

Formulation Of Program Ideas

As subject-matter leader for Agronomy Extension, Voss arranges *ad hoc* meetings of central staff specialists in crop production and protection to discuss and formulate program ideas.

These *ad hoc* meetings, Voss points out, facilitate communication between central staff specialists on a common

problem. Currently, each central staff specialist in the crop production and crop protection subject-matter areas—agronomy, plant pathology, weed science, and entomology—provides leadership for a major Extension education program.

Training For Enhanced Profitability

Two inservice training sessions for field staff, supported at the state level, were initiated at the university for area and county Extension personnel. The objective of this training was to enhance the potential of profitability in crop production—primarily of corn and soybeans—by providing essential information to crop producers.

Each subject-matter specialist provided educational materials to the area and county Extension personnel that could be used at educational meetings. These materials included a priority listing of inputs and decisions with the risks and benefits each producer should consider.

Specialists provided a priority listing for slides (in an outline format) which was supplemented by research data. Nine specialists cooperated to write an interdisciplinary publication for distribution to crop producers at meetings: *Profitability In Agriculture: Crop Management Decisions*.

Educational programs designed to reach clientele at the producers' level involve Extension personnel at state, area, and county levels.

An outgrowth of interaction between county, area, and central staff personnel was the development of crop enterprise records. This record system, initiated in a 1986 pilot program, permits producers to calculate their economic and production efficiency on a field-by-field basis. In 1987, the record system was revised.

Program Results

The total impact of Extension's effort with crop producers is difficult to ascertain, but a 1984 random statewide survey disclosed that crop producers using Extension information averaged 6 bushels an acre—higher yields than nonusers. They also averaged a higher corn yield and 1 bushel an acre more for soybean yield. The survey also showed that 23 percent of crop producers are more likely to make soil tests compared with nonusers of Extension information.

In 1985, the estimated cash savings for producers involved in an Extension crop loss reduction program were \$1,152 per participant for a total of \$6.5 million. In 1986, producers using Extension information realized \$6 million in savings on corn crops not requiring insecticide treatment.

Because of Extension information, individual producers in one area estimated they saved \$1,150 per farm in fertilizer costs; six producers in another area reduced fertilizer costs an average of \$17,000 per farm while maintaining yields. By using the new crop enterprise record system, crop producers are precisely determining cost of production on a field-by-field basis.

This past year, interest by crop producers in research-based information is evidenced by over 22,000 one-on-one contacts with Extension. In addition, over 23,000 producers attended crop production efficiency meetings.

Extension central staff specialists at Iowa State University will continue to emphasize production efficiency through an interdisciplinary approach because producers make decisions in this framework. ▲

Analysis Instead of Trial And Error

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From one viewpoint, agricultural production is a time-consuming trial-and-error process. It starts with a producer deciding to grow a particular crop or species of livestock and ends with the sale of the commodity produced. Throughout the process, the grower must make many decisions—but the cumulative result is known only at the time of marketing. In other words, the effectiveness of the grower's management is measured in yield per acre, pounds of animal produced, and price received.

To make the hundreds of decisions to produce even limited outputs, farmers have used rational analysis, personal knowledge, plain "gut" feelings, and management information from many sources. Indeed, the producer is the only one in agriculture who has to integrate so many kinds of production information.

Software System Developed

To provide corn producers with an aid for making more profitable management decisions, specialists in Kansas Cooperative Extension have developed an integrated software system for use on microcomputers, modeled on the ways farmers plan their crop production. Central to this system is a piece of software called the "shell," which connects individual programs called "modules" so they are interactive. Changing a cost value in the fertilizer module, for example, will affect what occurs in the cost/return module and elsewhere. The design of the shell incorporates features of electronic spreadsheet programs and microcomputer graphics. The user can enter "what if" values and see results almost instantly and see how one decision affects others.

Modules Form The System

Included in the system are modules on the major kinds of decisions a corn grower faces, such as hybrid selection, tillage practices, planting details, weed and insect control, harvest and

drying practices, and marketing. The bottom line of the shell concept—sharing production inputs and cost/return values—allows a producer to evaluate the cost-effectiveness of each productive input being considered.

The modules are organized by plant growth phases to deal with specific questions at a particular time during or outside the growing season. The design permits unplugging modules to modify them without disabling the entire system. Once the changes are made, the new versions of the modules are easily reinstalled. The shell can serve as a skeleton for additional systems involving other commodities and it can be applied to decisionmaking outside agriculture.

Development of the Corn Management System is virtually complete. Other decision aids are being worked on. For example, WHEATpro, for wheat producers, includes modules for cost/return analysis, formulating a fertilizer program, variety selection, wheat marketing strategies, and wheat price analysis.

Also under development is BEEFpro, a livestock production decision aid. It includes a cost/return analysis module and a troubleshooting module, which are nearly ready for distribution. The latter module evaluates current management practices and identifies areas for possible producer improvement. It also projects the dollar impact of implementing recommended changes. BEEFpro addresses cow-calf, wintering, grazing, and finishing. This system and one for swine are being developed under a multistate agreement by Extension workers.

Use Outside Agriculture

In its first application outside agricultural production, the shell forms the central body of a system for use by commercial grain elevator operators. They will be able to evaluate the

feasibility of investing in grain cleaning equipment.


COMMUNITYpro is a decision aid for community development. This system analyzes flows of goods and income for a multicounty region. It generates forecasts of employment, production, and income under many scenarios.

The ability of the same shell to support multiple commodities has led to the adoption of the term "PROtag" for the whole set of programs. (An earlier term, "proSeries," was dropped because of a trademark conflict.) PROtag software is designed for use on MS-DOS (IBM-compatible) machines. Because the packages require up to 2.5 megabytes of memory, a hard disk drive is usually necessary.

Shared With Other States

Initial funding for this ambitious software development project came in part from The W.K. Kellogg Foundation, matched by money from Kansas State. One of the terms of the grant from Kellogg was sharing the resulting software with producers in other states. Kansas has signed sharing agreements with 14 other state Extension services. Kansas trains participating specialists in PROtag module design and programming in exchange for any new software the signatory states develop.

County agents in Kansas will receive training in the PROtag Corn Management System this fall. After that, producers will be able to use the system at their county Extension offices or purchase a copy.

In summary, PROtag series software gives growers an analytical tool for making repeated "what-if" computer runs—both during and outside of the production season—to pinpoint immediately their best management alternatives. That certainly beats waiting all season to see how good their choices have been. 

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Catfish Farming— New Mexico Fish Tale

22 *Extension Review*

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Extension Associate
Agricultural Editor,
Publications
and
Tina M. Prow
Former Newswriter/
Photographer,
Agricultural
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Opposite and right: Commercially raised catfish are harvested by net before transport to local processing plants. Extension fisheries and wildlife specialists at New Mexico University are proving catfish farming has a future in the state's high desert country.

Photographs courtesy of the Soil Conservation Service, USDA.

Catfish farming in New Mexico's high desert country? It may soon be a reality. Last January, a recently formed organization—the New Mexico Catfish Growers Association—held a meeting at New Mexico State University (NMSU), Las Cruces, featuring discussions about production methods and marketing information. Approximately 100 people attended from all over the state, half of them ranchers.

"I was surprised at the number of ranchers, but perhaps I shouldn't have been," says

James Knight, Extension fisheries and wildlife specialist at NMSU. "Most ranchers already have ponds and stock tanks where they can raise catfish. Some are even looking into raising catfish in irrigation ditches.

"We decided to set up the meeting," Knight says, "after getting several calls about catfish farming. These people had either seen catfish operations or had read about them somewhere."

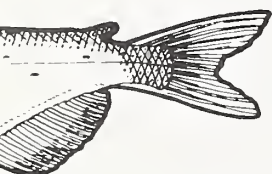
Knight believes that catfish farming, already successful in the Ozark Mountain region and in several south-central states, might have a future in New Mexico.

Reliable Water Supply

One farmer from Carlsbad who attended the meeting owns two center-pivot irrigation units fed from a reservoir. "He intends to grow catfish," Knight says, "in the reservoir that also provides water for his crops. Those are encouraging conditions. Still, we were careful at the meeting not to paint too rosy a picture. This region receives about 6 inches of rainfall a year but the evaporation rate amounts to about 6 feet. Purchasing water to compensate for 6 feet of evaporative loss can represent an automatic financial loss. Unless a farmer or rancher has a reliable source of free, or cheap water, the problem is obvious."

For years, New Mexicans interested in raising catfish have had a problem finding a market. If a farmer or rancher has year-round water, Knight points out, he can grow catfish and have a ready market. In Belen, a recently opened processing plant is already shipping 50 tons of catfish purchased every year from Mississippi catfish farmers to supply the Albuquerque and Santa Fe metro market. The owner of this plant has stated he would consider expanding, if there was a steady catfish supply from within the state.

This new processing plant, Knight believes, will allow people to concentrate on growing catfish and know they have a ready outlet once they are produced. In addition, a packing plant near Clovis is seriously planning a conversion to catfish processing.





Estimates on catfish growth are based on 1,000 1-pound catfish per acre of surface water annually. "This amount requires a 90-day growing season," Knight says, "where the optimum water temperature is 85 degrees F. Growing 4,000 pounds per surface acre is possible but creates some special problems. Cloudy days interrupt the cycle where sunlight causes oxygen to occur naturally from living organisms in the pond. On such days the catfish farmer must aerate the pond water through sprays or by injecting oxygen directly into the water."

Water Temperature Critical
Evaporation cools the pond water, Knight points out, and during the summer catfish farmers may have to cover half the pond surface with plastic to raise water temperature to 85 degrees. Water temperature can be raised in a tank or pond with a solar breadbox heater, he says, and a solar cell array driving a DC motor and pump may be feasible in remote locations. But cost is a factor with these approaches.

Water temperature limits, Knight says, might force catfish farmers in the northern half of New Mexico to settle for one crop every 2 years. Catfish can live through a winter, even under ice, and reach the 1-pound market weight the second growing season.

Feed Costs

"Fish, like livestock, have to be fed," Knight says, "and feed costs determine, to some degree, who can afford to be in the catfish farming business. A farmer alone may have to pay as much as \$400 a ton for prepared catfish food. But if catfish farmers purchase a truckload of feed together or through an association then costs can be cut to \$100 a ton."

Knight points out there are problems that potential catfish farmers should consider. Fish diseases often appear when fish are stocked at rates heavier than 1,000 pounds per surface acre. And farmers need to find a reliable source of fingerlings (young fish). Initial cost of fingerlings is 3 to 7 cents each, depending on size, he says.

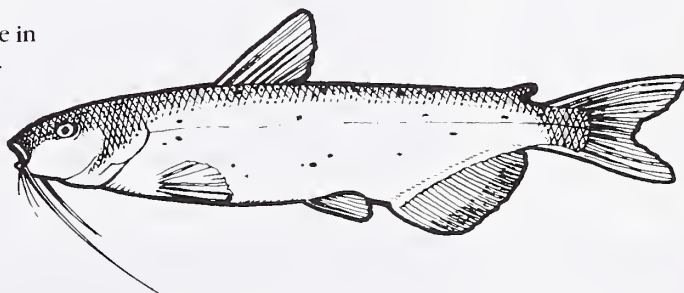
"Extension has the technical information that individuals need for catfish production," Knight says. "Information is also available on sources of fingerlings, floating food, and existing market prices."

Knight notes that the new organization, the New Mexico Catfish Growers Association, will offer expertise for catfish production and allow producers to exchange information.

Potential Market

Jay Wells of the Valley Grande processing plant reports that all of the catfish they are currently marketing come from Mississippi. "If New Mexico producers could supply us with catfish, I would be able to cut down on my trips to Mississippi," Wells says. "At the present time, I feel the market for catfish in the western United States is virtually untapped."

"It's obvious that once your initial costs are recouped," Knight says, "quite a bit of profit is available in catfish production. Catfish farming has potential in New Mexico."



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Fit For Life Impacts Producers

24 Extension Review

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The Texas Extension educational program—Fit For Life—has helped more than 3,000 Texans with weight control and overall fitness and eating habits.

Extra attention is centering these days on the impact of diet and exercise on physical fitness.

Good eating—watching the diet—is paramount to physical fitness. And, that gets the attention of farmers and ranchers who work hard to provide quality food products—and remain competitive in the marketplace!

Producers want consumers to enjoy good nutrition and take pride in the fact that they play an important role in this effort. Helping consumers learn more about good nutrition can lead to an increased demand and market for certain agricultural products that fit today's active, weight-conscious lifestyles.

Texas Effort

A successful effort dealing with weight control and exercise has been underway in Texas for about 2 years. Called "Fit for Life," the 12-week Extension educational program has helped more than 3,000 Texans control weight and improve overall fitness and eating habits.

Coordinators Mary Ann Heussner, health education specialist, and Alice Hunt, nutrition specialist, point out that the program focuses on long-term, permanent weight control.

Program Results

Texas who took part in the 12-week program lost an average of 4 pounds each for a total of 12,000 pounds—or 6 tons! A follow-up survey indicates that participants not only maintained weight loss, but they continued to lose an additional 3.7 pounds each and 5.6 percent of body fat 1 year after completing the program.

Participants ate significantly more protein, fruits and vegetables, and dairy products as a result of the program and reduced their intake of sweets and fried foods, note the Extension specialists.

In addition to helping individuals lose weight and keep it off, "Fit for Life" also focuses on control of blood pressure, following dietary guidelines, improving cardiovascular fitness, and increasing flexibility.



Improved Economic Health, Too

Improvements in health and fitness equate to improved economic health for Texas, Huessner and Hunt point out.

Good eating and exercise habits help control obesity—a risk factor for at least 5 of the 10 leading chronic diseases which account for the majority of health and medical dollars.

The economic implications of being overweight and not being fit can be severe. Obesity increases the chances that employees will suffer from back pain, and backaches account for 93 million lost workdays in the Nation annually, note Huessner and Hunt.

Additionally, people who are 40 percent overweight visit their doctors and miss work twice as often as the average individual. This costs the average employer an extra \$1,000 per year for each such overweight worker.

Huessner and Hunt say that nationally business and industry spent \$97 billion for health care in 1984. That same year \$387 billion—\$1,584 per capita or roughly 12 percent of the Gross National Product—was spent across the Nation on health and medical care. It took \$23 billion to cover health and medical costs of Texans that year.

Future Trends

By the year 2000, health and medical care costs are estimated to be about \$4,000 per capita, which means that the medical and health bill for Texans will skyrocket to \$92 billion. That's one reason why good eating and exercise habits are critical to the control of obesity and its many associated health problems, emphasize the two Extension specialists.

Good, nutritional eating habits will influence future production of high-quality food products—sending signals to producers to adjust to a changing, but profitable market! ▲

Profits From Pesticide Education

Extension Review 25

Without pesticides to control pests and diseases that thrive in the state's warm, humid climate, Florida farmers could not survive—much less turn a profit—in today's competitive marketplace.

But the use of pesticides in Florida is complicated by the danger of groundwater contamination and other sensitive environmental issues, by changing federal and state regulations on use of chemicals, and by agriculture's close proximity to rapidly growing urban areas.

"For these and other reasons, it's easy to see why education in the proper use of pesticides is important to agriculture in this state," explains Norman Nesheim, Extension pesticide information coordinator, Institute of Food and Agricultural Sciences (IFAS), University of Florida.

Compliance Problem

"Probably the biggest single problem facing farmers—as well as commercial and public sector pesticide users—is the need to comply with an increasing number of environmental regulations, particularly from the federal Environmental Protection Agency (EPA)," Nesheim states.

Proposed EPA regulations to protect endangered species and groundwater, Nesheim points out, are of particular concern to growers. Nesheim is working with IFAS Extension specialists and industry commodity groups to determine how these regulations will impact on agriculture. They are investigating how various user groups can be trained to comply with restrictions while still having access to the chemical tools they need.

If pesticides are not used properly, Nesheim emphasizes, the state's porous, sandy soils and high water tables increase the danger of groundwater contamination. "We've had a few instances," he says, "where wells have been contaminated by EDB (ethylene dibromide) and aldicarb because of improper pesticide mixing and loading of spray equipment. These are the kinds of problems that can be solved by educating those who handle materials in the field."

Pesticide Education Efforts

To demonstrate how pesticides can move through the state's soil profile and contaminate groundwater, a computer-based model developed by Arthur G. Hornsby, Extension soil and water management specialist, is being shown at Pesticide Fate and Transport Workshops around the state.

In addition to an ongoing statewide Extension pesticide education effort that uses videotape presentations, printed materials, and other educational media, Nesheim is working with county Extension offices that conduct pesticide applicator training schools around the state. This train-

ing is designed to help farmers and other users obtain state certification to apply restricted-use products. To date, more than 18,000 pesticide applicators have been trained and certified.

The Extension educational effort also includes Spanish language pesticide training for field workers in south Florida.

Program On Agrichemical Legal Issues

An agricultural law program—a component of Florida's Extension pesticide education effort—received USDA's Distinguished Service Award in June 1987. Michael T. Olexa, project director and Extension legal specialist, says the effort is a national model on how to address pesticide regulatory issues.

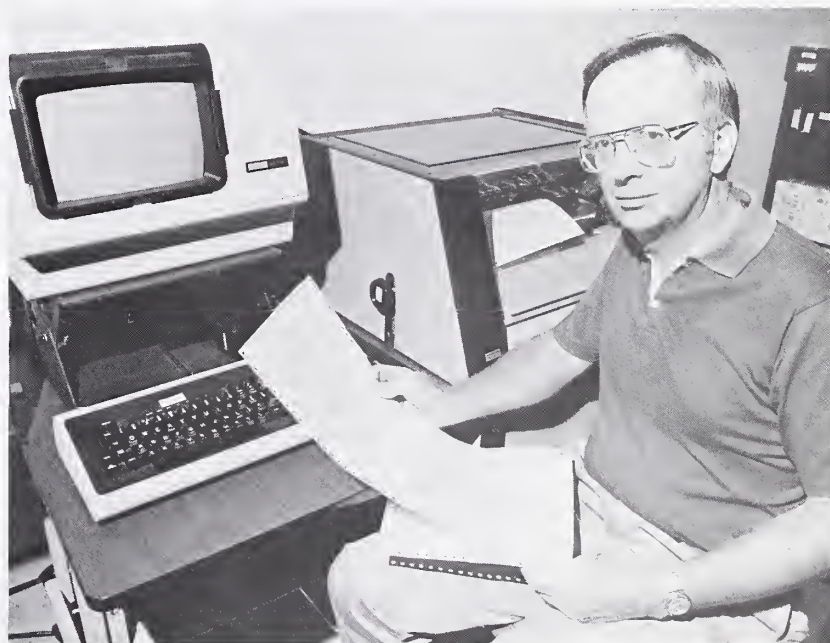
The program, Olexa explains, deals with critical agrichemical legal issues related to chemigation (application of agricultural chemicals through irrigation systems). It also covers agrichemical runoff, pesticide drift, need for supportive data for continued use of some chemicals, farm worker safety, pesticide storage and disposal, and proper use of chemicals to protect public health and safety.

"The program has also alerted users throughout the nation to install irrigation backflow prevention equipment," Olexa says.

After Florida testing and development, the program was offered to other states. To date, 76 workshops and seminars have been presented to about 15,000 persons in 45 states. Approximately 12,000 copies of project publications have been disseminated and the concepts widely publicized in the farm press. **A**

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Department, Institute
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Nesheim, Extension pesticide information coordinator, Institute of Food and Agricultural Sciences, University of Florida, checks a list of pesticides that may be restricted. Nesheim believes the competitiveness and profitability of Florida agriculture is linked to the proper use and continued availability of pesticides.



Education—Effective Substitute For Regulation?

26 Extension Review

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Public awareness of environmental values has heightened across the Nation in the 1980s. This is particularly true in a state like California with its bountiful natural resources. In 1983, to address this issue, the California Board of Forestry appointed a Hardwood Task Force (HTF) to study emerging environmental and resource management issues as they pertain to the management of hardwood species on both commercial forests and rangelands.

Inadequate regeneration of some oak species on rangelands and a decline in rangeland wildlife habitat were impacted by land use change and increased firewood harvest.

Hardwood Rangelands

The HTF coined the term "Hardwood Rangelands" for these oak-covered woodland areas of the state. The hardwood rangelands cover over 7 million acres of California. Livestock grazing represents the predominant use on this land.

In early 1985, the University of California (UC) Division of Agriculture and Natural Resources, which includes both Cooperative Extension and the Agricultural Experiment Station, was encouraged to develop a fresh, new educational approach and a well coordinated research program in response to HTF's findings and recommendations. Also at issue was the need for new regulations directed at the owners of the hardwood rangelands. Could UC design and implement an effective educational program that would motivate landowners and developers to voluntarily comply with best management practices?

A comprehensive proposal in both education and research was designed after UC's highly regarded Integrated Pest Management Program.

It called for an interdisciplinary approach to problemsolving. UC redirected its effort by assembling current information

about oak woodland management and translating it for the benefit of users.

New Manual

The new CES manual *Preliminary Guidelines for Managing California's Hardwood Rangelands*, was written to assist the ranchers in the multiple use management of their oak-covered rangelands. Its theme, "Preserve Your Options," suggests that resources such as wood, wildlife, and water, will gain value in time.

By setting up a management plan which retains oak trees for the enhancement of wildlife and riparian areas, the owner may be giving up short-term income prospects in favor of larger profits in the future.

The guidelines focus on those practices which make economic sense to the owner. Emphasis is placed on gaining additional income through the management of several game species: deer, turkey, wild pig, and quail for recreational hunting.

The manual is already proving useful. A rancher asked the local CES livestock farm advisor for assistance with a firewood sale. With counsel from Extension forestry and wildlife specialists, specific trees were marked for harvest, wildlife corridors were left, and trees with exceptional acorn production retained. This thinning took out about 5 cords of wood per acre. The rancher used income from the firewood sale to offset range improvement costs such as seeding and fertilization.

Within a year, Farm Advisor Bob Willoughby hosted a field meeting to highlight the work. Using the principles demonstrated on the 10-acre site, additional wood harvesting is planned for the area this year.

RREA Impact

Dollars from the Renewable Resources Extension ACT (RREA) are also funding several educational and research projects addressing other needs

of oak woodland owners. A colorful brochure specifically targets owners of small hardwood ranges. An "expert" system, illustrating the concepts of the "Preliminary Guidelines" is being developed for microcomputer use. Several county projects demonstrating hardwood range management principles were also supported by RREA funds.

The Integrated Hardwood Range Management Program is a 10-year plan of Extension and research activities focused on management problems with high priority. The plan includes the hiring of five new Area Natural Resources Extension Specialists with a broad background in forestry, range, and wildlife management.

Applied Field Research

An applied field research program was implemented based on the priorities set by the Policy Advisory Committee. This program was jointly funded by the State Legislature on July 1, 1986. One million dollars of new money was authorized, with \$650,000 allocated to the University's budget and \$350,000 placed in the State Department of Forestry's budget.

The program makes a strong commitment to working with nontraditional clientele groups such as the small, absentee oak-woodland owners, woodcutters, real estate developers, and groups of environmental activists interested in protecting oak-woodland resources.

Conclusion

We know our educational job is not over when a new publication is handed to a reader. We must be able to evaluate our efforts; we have a responsibility to constantly monitor evidence of change in attitudes, behavior, and practice among our identified clientele.

Our goal is to find out if education can be an effective substitute for regulation. **A**

USDA's Food and Fitness Program

Extension Review 27

USDA's Food and Fitness Program was established to link USDA agency programs that emphasize to the American public the vital connection between food production; marketing; distribution; protection of the food supply; research and education; and the need for a viable agricultural economy.

The U.S. food and fiber system provides the world's most varied, abundant, and nutritious food supply. However, consumers must make wise choices from this nutritious, safe, economical food supply by eating a varied balanced diet combined with exercise to maintain a desirable body weight and enhance optimum health.

The Extension Service is designed to coordinate and implement the USDA Food and Fitness Program nationwide. The program differs in each state, all of which are participating, as they design programs for their clientele. Farmers are joining the fitness generation. Ron Jester, Extension safety specialist in Delaware, reports that Extension, Blue Cross & Blue Shield of Delaware, Inc., Delaware Department of Agriculture, and the Delaware Farm Bureau Rural Health Committee sponsored a Farm Fitness Challenge 5K Race. Special awards were given to male and female finishers, farmers and spouses, 4-Hers, FFA, GRANGE, a Farm Bureau member, and a farm family. The race, a great success, demonstrated a fit farm community. This is the fourth year for this popular event.

American consumers consider food safety their number one concern. Thus Extension staff across the country have major demands for information concerning the safety of the food supply. A recent survey reported over 3 million calls to Extension in 1986-87 concerning the safety of flesh food products. Also, 135,000 individuals were instructed in food safety by 9,000 volunteer

leaders. In addition, Extension has increased educational outreach to professionals and food handlers. These programs have targeted audiences with the greatest need, such as small businesses, government, and industry groups with known problems.

Red Meat Project

USDA Extension Service recently funded a pilot project for an educational program on red meat. The development process includes an interdisciplinary team of Meat Science and Food and Nutrition Extension Specialists from state Extension services with leadership provided by Florida, Kansas, and Texas. In addition, an advisory group of red meat industry representatives and end-users' organizations is providing input into program planning and development. The anticipated benefits of this joint Extension-private sector approach is the development of educational materials and programs that provide consumers with a clearer understanding of red meat's role in a varied, balanced diet.

Worksite Wellness

In 1982, the U.S. spent more than \$320 billion for health care. That is more than 10 percent of our GNP. Each year, 500 million workdays are lost due to illness or disability. Employer health care costs are rising at the rate of 25 to 100 percent a year, an estimated 25 percent of total payroll for health care. The USDA Food and Fitness Program involving 22 USDA agencies joined forces with the National Life and Health Insurance Industry to develop a manual to assist employers in implementing a worksite wellness program for employees. USDA has received over 6,000 requests for the manual. The majority of these requests have been from the medical community—a new audience for Extension programs. All USDA Agencies have received copies of the manual and Farmers Home Administration has used it nationally for

their employees' wellness program. Forest Service and Agricultural Marketing Service have reported the manual useful in conveying wellness information to their employees. Copies were also made available to all county Extension offices.

Another example of groups working together to educate consumers on food safety are the national women's farm organizations. Although these organizations represent a wide diversity of agriculture, they currently share their concerns and work together through The Farm Women's Leadership Network.

The Network participates in quarterly teleconferences sponsored by the Extension Service. Dixon Hubbard, coordinator, Competitiveness And Profitability, and Bonnie Tanner, executive director, Food And Fitness Program, both of Extension Service, USDA, are the liaisons. Through these teleconferences the groups share common concerns and are briefed on legislation, research, USDA programs, and Extension National Initiatives. Members of the Network have participated in the Agricultural Competitiveness And Profitability Forum, the National Family Community Leadership Workshop, and the development of the National Extension Red Meat Project and other educational programs.

The Farm Women's Leadership Network proved valuable in helping its participants agree to sign a consensus statement at the 1987 Farm Women's Forum in Washington, D.C., which pledged their willingness to work together on common issues. One of their common issues involves *balancing human wellness, nutrition, and environmental concerns with agricultural competitiveness and profitability.* ▲

Bonnie O. Tanner
*Extension Executive Director,
Food and Fitness Program
Extension Service,
USDA*



Enhancing Profitability Outlook

28 Extension Review

David L. Holder
National Program
Leader, Marketing,
Extension Service,
USDA



Producers' decisions about what to grow, how much, and when to sell depend largely on the price they expect to receive in the marketplace. These decisions, and their outcome, determine the profitability and often the very survival of these producers' farms.

Farmers and ranchers use a variety of sources to obtain market information or "outlook" information necessary to complete their production/marketing plans. A recent national survey shows that the Cooperative Extension System is an important information source used by all types of producers when making important decisions.

Extension Role

Extension helps to distribute basic data about market conditions. However, its greatest contribution is in interpreting the data and helping producers analyze the impact of worldwide market conditions on their farm/ranch decisions. Also, Extension emphasizes the longer term analyses needed to make crop and livestock production decisions. Extension helps producers understand marketing alternatives, evaluate alternative opportunities and strategies, and develop effective production/marketing plans.

Over the years, Extension analysts have gained a reputation for providing objective analyses based on the best information available. While their market forecasts cannot be guaranteed, Extension staff provide producers with an understanding of what is likely to happen and why.

In recent years, the forecasts have been broadened to include information on the range of possible market outcomes and the associated risks. Producers are being trained to survive better in an uncertain world. This Extension outlook program involves county, state, and federal Extension staff and employs a variety of methods to reach its audiences.

Info From COIN And EDI

A primary function of the federal staff is to ensure that state specialists have quick access to all USDA data and analyses. In the early seventies, for this reason, computerized information access was developed and established as the Computerized Outlook Information Network

(COIN). Extension Service, USDA, was responsible for the daily inputting by several USDA agencies into COIN. In 1985, with help from the Extension Service, a department-wide Electronic Dissemination of Information (EDI) system was initiated. All USDA market reports are now prepared electronically by each agency and loaded directly into EDI at scheduled release times. They are made available instantaneously to any firm or organization including Extension offices having computerized communications equipment.

Most states provide outlook analyses that enable producers and agribusinesses to make better production marketing decisions. State marketing specialists receive information from EDI and other sources, then use different media to distribute the information. Timeliness is critical. Much of the information is delivered through radio, TV, and newspapers. Several states have their own computerized distribution systems or participate in a regional system. Seventeen state specialists use EDI to nationally distribute their analyses. Other statewide methods include code-a-phones, newsletters, trade magazines, and outlook meetings. County staff are also involved in delivering information to producers through the use of computer bulletin boards, telephone, and mail, and through meetings.

Interstate Efforts

Each fall, several states in the upper midwest, and states in the northwest, cooperate on regional outlook publications. Regional Extension marketing committees plan and conduct regional outlook conferences attended by analysts from state Extension services, USDA, banks, and agribusinesses. Extension staff in Washington, D.C., plans and hosts USDA's annual national outlook conference.

The Western Livestock Marketing Information Project (WLMIP) is a joint effort of 17 western and plains states, plus Extension Service and Economic Research Service, USDA. WLMIP provides weekly updates and materials to specialists in cooperating states, and publishes for producers the monthly, *Livestock Roundup*.

In 1986, WLMIP achieved substantial savings in printing and postage costs, and dramatically increased its readership as well, by delivering its copy electronically to selected farm and ranch magazines rather than by preparing individual publications.

It is difficult to measure the full impact of these Extension education programs. However, we know that farmers are seeking our advice and incorporating it into their decisions. Better decisionmaking enhances both competitiveness and profitability. ▲

Getting The Word To Oklahoma Producers

Extension Review 29

The 150-member task force for the National Extension Forum on Competitiveness And Profitability stated that agricultural producers needed timely, accurate information and education to compete in today's global market. Kim Anderson, an Extension grain marketing specialist at Oklahoma State University (OSU), has developed an information program to provide farmers with precisely that kind of competitive edge.

Anderson's Extension efforts range from mass media efforts and computer programs to newsletters and crop-reporting service information. "All of my work," Anderson states, "is directed toward educating farmers about what pieces of information are important to them, where they can get that information, and how they can use that information once they have it.

"Even my 2-minute TV spots are in line with these information objectives," Anderson says. "For example, when I broadcast the price outlook I try to slip in information to producers on why this information matters and what they should do about it."

Anderson primarily makes his TV appearances on "Sunup," the Extension morning farm show at OSU. Occasionally, he appears on commercial broadcast stations. He has taken part in two videoconferences produced by OSU Extension that dealt with the wheat market situation and outlook.

Anderson uses "Market Viewpoints," a weekly radio program produced at OSU, to get information across to agricul-

tural producers. The program airs on the Oklahoma Agri-Network to 45 radio stations in Oklahoma and Kansas. Some of the radio tapes are worked into wrap-around stories that are released to radio stations in the state through agricultural information's call-in service.

"I try to teach farmers there are two kinds of information they need to make decisions—long and short-term," Anderson says. Long-term information, he explains, includes worldwide stocks, production, and usage. "These are the things a farmer looks at," he says, "when he decides how many acres to plant and what price objectives to set for his crop."

Producers use short-term information to make all their marketing and selling decisions, Anderson points out. He tells farmers the most accurate short-term information is reflected by the futures market and tries to teach them ways these markets can help them make a profit.

An example of a lesson Anderson taught this spring occurred when Russia purchased 147 million bushels of wheat. "When the sale was announced the prices jumped and nobody knew how high wheat prices would go," Anderson says. "Yet the long-term market information showed there remained a glut of wheat in the world market." Anderson employed various media outlets at the time to inform farmers they should take some advantage of the initially higher prices that occurred. Anderson suggested to farmers to forward contract or sell a futures con-

tract on at least part of their wheat. "The short-term price was high," Anderson says, "and the long-term market information said prices shouldn't stay high."


Information Delivery

OSU Extension information gets the word out to agricultural producers through two marketing newsletters. "Market Viewpoints" is distributed monthly to 4,500 agricultural producers. "Grain Marketing News" is distributed monthly to approximately 800 readers in grain elevator agribusiness.

OSU Extension's two computer-operated market outlooks can be accessed by producers and those in agribusiness: the Agri-Data Information Network and the Cooperative Extension Service's Dialcom Network.

OSU Extension offers adult education courses, workshops, meetings, and conferences each year at local, regional, and state levels. Participants at these meetings typically include livestock producers, bankers, and grain elevator operators.

News from the agricultural information department at OSU reaches the popular press through state and regional publications or, upon request, is sent directly to state newspaper editors and regional agricultural magazines.

Extension at OSU offers home study courses for farmers which outline Anderson's basic premise of what, where, and how they can obtain the "timely and accurate" information and education they need to compete effectively. 

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Extension IPM
Specialist,
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INFONET—Statewide Telecommunication System

30 Extension Review

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*Extension Home
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William Coli
*Extension IPM
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In the past decade, the amount of information associated with rural issues in Massachusetts, and the demand for that information, has risen dramatically. The juxtaposition of production agriculture, rural towns, and burgeoning urban economies may have created more demand for information on integrated pest management (IPM), water quality, maintenance of home grounds, land use, and pesticide use than in other areas of the country. At the same time, a reduced Extension staff could not keep pace with this rising demand.

In the spring of 1986, this situation was especially true in such program areas of Cooperative Extension at the University of Massachusetts as IPM and home horticulture, and there were similar problems in other program areas.

Potential Solution: Electronic Mail

Many believed a potential solution existed in the form of a computer-based message system—the electronic bulletin board or electronic mail. For a number of years, Extension's Apple and IBM programs had been using the electronic mail facilities of the Cyber computer at the University Computing Center. This system allowed specialists to enter pest reports as soon as they were available; regional specialists could access the reports soon afterward.

At various offices, when messages were typed on terminals, they were transferred to the Cyber host computer and stored. Personnel at regional offices communicated with the host computer using conventional phone lines, and printed the message at their terminals.

During the growing season, growers received information from the system through a newsletter and recorded phone messages. A survey during this period revealed that 96 percent of the growers found the messages a useful aid in spray decisionmaking. Ninety-four percent of the growers cited the messages as a major source of pesticide information. In addition, local experiment stations, the state pesticide laboratory, and the pesticide bureau in the Massachusetts Department of Food And Agriculture were linked into the system.

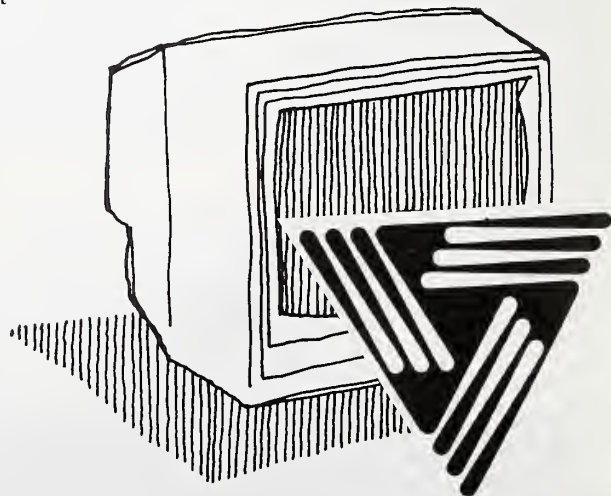
Some Difficulties

This system worked fairly well except for some significant problems. To change the system's structure, even in minor ways, required that one specialist at the University Computer Center make these changes. This specialist was not always available, particularly during the heavy-use months of summer. In addition, the host computer often failed, or "crashed," because it served many other purposes besides electronic mail; during these down times the mail facility could not be accessed. The University Computer Center also charged users for the service.

Statewide Electronic Bulletin Board

Several Extension specialists realized that electronic mail could be transferred to a personal computer "host" using relatively inexpensive hardware and software. When University President David Knapp announced a program for grants in the area of telecommunications pilot and demonstration projects, a proposal was written for a PC-based bulletin board in various program areas. A \$12,000 grant was awarded to develop a statewide electronic bulletin board. The proposal would link all county offices with a PC host on campus, and provide training and equipment support where necessary.

This new system would provide information for integrated pest management for apple, cranberry, potato, sweet corn, turf, and other IPM programs as they developed. It would provide commercial horticultural information on tree fruits and small fruits. Other areas covered would be agronomy, dairy, farm management, home horticulture, pesticide registration, and Master Gardener material. Also included would be the so-called "intelligent information systems"—expert systems that diagnose plant diseases.



Hardware And Software Purchases

A standard IBM-compatible personal computer (Leading Edge, Model D) was purchased, configured with expanded memory (640K), a hard disk drive, and an external modem (Hayes). And, at this point, we obtained the bulletin board software package FIDO and shaped it to contain areas for information files of various types. FIDO is set up to permit an area of general, short messages between users—either private or public—and thereby eliminate “missed” telephone calls.

INFONET is linked to other FIDO-based boards around the country, and messages are automatically exchanged during low phone rate and low use periods. Substantial information, such as fact sheets or pest messages, are stored in file areas, under general headings which can easily be scanned. Users can perform automatic searches for topics of interest.

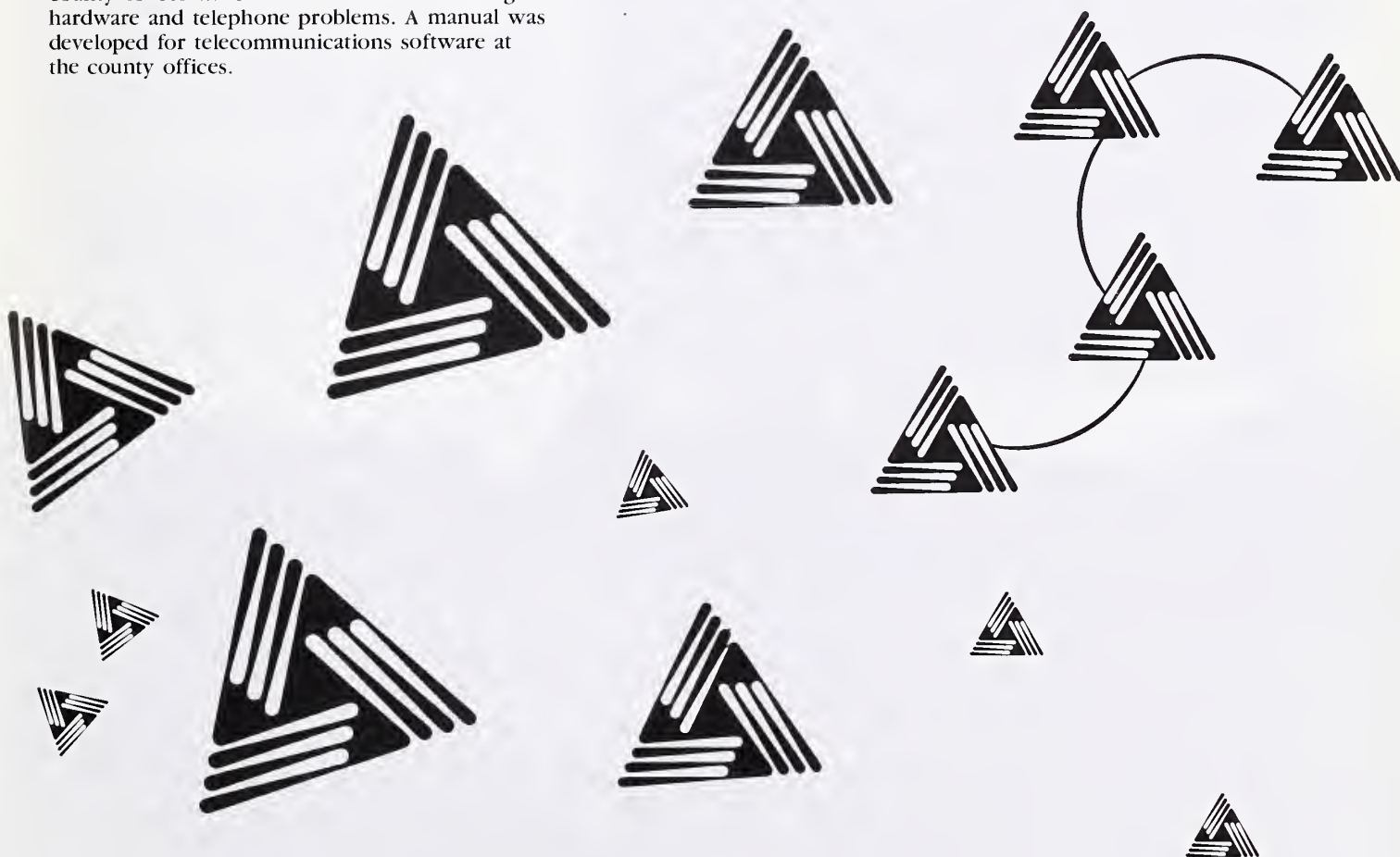
In August 1986, Wesley Autio, Extension specialist in Pomology, and Kathleen Leahy, Extension Technician, Department of Entomology, at the University, began the job of overseeing the system's actual use. In addition, Autio, Leahy, and William Coli, Extension IPM specialist, launched a training program for the county offices which included troubleshooting hardware and telephone problems. A manual was developed for telecommunications software at the county offices.

IBM-compatible users have largely settled on another shareware package, QMODEM, which has a user-friendly, menu-guided interactive format like FIDO.

Future Plans

At present, at least one person in each county office accesses INFONET on a regular basis. To date, over 4,200 calls have been logged into the system, including a few regular grower calls. The user list already includes well over 100 names. Plans are underway to accommodate more phone lines into the system. A back-up computer has been obtained in case the original host “crashes.” There are now two new electronic boards: INFONET 2, developed by Pat Vittum and located at the Suburban Experiment Station, Waltham, and EXNET, developed by Extension administration and located at the University.

Under discussion is the idea of centralizing the Massachusetts Extension boards under a single heading to minimize costs of clientele's long-distance phone expenses. It is felt that such a linked system will allow convenient networking of all Extension-related information. *A*



Restoring Profitability In North Carolina

32 Extension Review

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The "crisis" in farming, agribusiness, and rural economics is far from over. The big question is what Extension does after the "bank aids," the "farm aids," and all the "other aids" are discarded. How can competitiveness and profitability be restored to rural areas?

Extension's major challenge is to get the rural population and national and state leaders to focus on alternative solutions to the problem and to assist them in achieving these goals.

Extension needs to focus on a program of policy education dealing with the realities of the agricultural situation and viable future alternatives. These realities are agricultural surpluses; large government payments (which often help marginal farmers survive while delaying the adjustments required to establish a competitive agriculture); and constant government emphasis on price and production, rather than a focus on income maintenance.

An adjustment in resources may offer the most viable long-range solution to improving profitability and world competitiveness in agriculture. This objective requires that some resources move into other uses. Profitability of the total system will be enhanced when some resources are shifted in this fashion.

Viable Alternatives

Many rural communities may be unaware or unwilling to face the problems created by this reduction of agricultural human resources. Many communities are not planning or attempting to develop nonfarm business opportunities to absorb these resources into the local workforce. When this reduction occurs, as it did after World War II, human resources will leave these communities to seek nonfarm employment elsewhere.

It is difficult to keep rural residents focused on leadership development when times are good. Success will elude Extension professionals unless they stimulate leaders in rural areas to take action.

To restore competitiveness and profitability to rural economies, Extension programming must return to the basics of earlier programs—programs which focused on the adoption of economical production practices.

Initial Focus

Since the early 1960s, North Carolina State University (NCSU) and North Carolina A&T State University have focused on improving the competitiveness and profitability of rural agriculture. At that time, the 1890 component of Extension was focused almost entirely on production agriculture. Through inservice training sessions at NCSU, Extension marketing specialists sought to improve county agents' understanding of the existing market system for fruits and vegetables, quality concepts in marketing these products, and the organization of producer cooperatives to improve the net income of small producers.

Several USDA contracts to develop training materials for use with agricultural marketing firms and with the forestry industry in North Carolina provided the impetus for improving competitiveness. These educational programs improved the management skills of rural agricultural businesses and rural communities received many of the early benefits.

USDA-sponsored contracts at North Carolina State and Purdue Universities enabled Extension specialists to be trained in agribusiness management principles and concepts. These programs resulted in a cadre of trained management educators whose focus was agribusiness and rural non-farm business education. Many of the current



agribusiness management educational materials are adaptations of this early work.

In the early 1960s, this success led to management training programs for rural employers in the textile industry. These programs, achieved with the cooperation of the School of Textiles at NCSU, evolved into today's separate Extension textile education program.

Early CRD Focus

The Rural Area Development Program of 1959 had as its objectives the improvement for rural citizens of income and employment opportunities, health, housing, and leadership abilities. The focus was on finding income and employment opportunities for persons released from production agriculture and the improvement of economic community services for rural residents. These objectives continue to be major thrusts of Extension Community and Rural Development programs.

Coping With Immediacy

By the 1970s, when the farm crisis occurred, Extension infrastructure had been diversified into other educational areas in response to client needs. The short-term response to the lack of competitiveness and profitability in North Carolina and many other states was the refocusing of personnel in a program called: "Managing For Tomorrow." This program helped distressed farm families with immediate problems caused by insolvency or inadequate cash flow.

During this period, when agribusinesses and other rural nonfarm businesses looked to Extension, they found small staffs dealing with primary farm audiences, ill equipped to help them with the business management principles and concepts they needed.

Programming Needs

Current programming needs the adoption of public policies which assist in resource adjustment and competitive behavior. Community and small business programs must stimulate nonfarm development.

In the 1980s, farmers are redirecting their efforts to increasing profits through controlling costs and improving marketing. Rural business owners, like the producers of agricultural products, need to run a "tight ship," maintaining the awareness that cost reductions through increased efficiency and volume may have a dramatic impact on profits.

Meeting The New Realities

Restoring profitability and competitiveness to agriculture and agribusiness may not require great innovations in programming, but rather an updating of materials which focuses on methods which succeed in an economic climate of adverse commodity prices and increased input costs.



Production practices may have to be examined in light of the changed relationships between output and input prices and coefficients. This is not a new initiative but a rededication to efficiency which received less emphasis during the recent expansionary period.

The need for a team approach to the adjustment problems of agriculture is critical. Because rural problems are not totally production oriented, production specialists must become involved in some new and broader areas of responsibility to meet the educational needs of rural clientele.

We have come a long way from the relatively isolated markets of 30 years ago to today's complexities. During the next decade, it will be necessary for Extension personnel to reorient and remotivate themselves so that they can help rural residents, leaders, and agribusiness persons understand the new realities. **A**

Revitalizing The Greenhouse Industry

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In 1979, A.N. Pierson, Inc., located in Cromell, Connecticut, one of the largest greenhouse operations in the United States, reached a low point. Because of the astronomical rise of fuel oil in the 1960s, labor costs, and other factors, the company—like many others in the industry—had to drastically reduce a once prosperous business. At this point, the wholesale greenhouse florist firm donated 31 greenhouses, related furnishings and equipment, covering 181,000 square feet to the Department of Plant Science at the University of Connecticut.

Today, the business can boast of a successful comeback, thanks to new leadership under President Douglas Pierson (who represents the fourth generation of Piersons to serve as company president), and because of new technology, innovation, and the easing of fuel costs. To restore profitability to his greenhouse business, Pierson initiated a number of cost-cutting and energy conserving measures.

Many of these cost-cutting energy conservation measures were initiated by Extension specialists and horticulture agents of the University of Connecticut. These included reglazing single-layered glass houses with better insulated double-layered materials, using previously untapped exhaust heat, heating greenhouses with high pressure steam to produce electricity, and using high intensity lighting in greenhouses to improve plant yields.

The firm's success in developing new ways to save energy and its willingness to share ideas with other growers was recognized a few years ago when Connecticut Governor O'Neill presented Douglas Pierson with an Energy Conservation Award.

Currently, the outlook is bright for the Connecticut's \$58 million greenhouse industry. There are 500 greenhouse operations in the state, of which 300 have plant nurseries, largely for growing woody ornamentals such as rhododendrons and azaleas. Three of the state's greenhouse operations rank in the nation's top 100 in gross income sales. However, the backbone of the state's greenhouse industry is the family-run operation with less than 15,000 square feet under glass.

Extension's Role

This revitalization of the state's greenhouse industry would not have been possible without the efforts of Extension specialists and horticulture agents at the University of Connecticut (UConn). This team, led by Jay S. Koths, recently retired Extension floriculture specialist, counseled greenhouse growers on plant production and marketing problems.

John Bartok, Jr., Extension nursery landscape specialist, works with Joseph Maisano Jr., Allen Botacci, and Carl Salsedo, Extension horticulture agents, to advise growers on ways to increase mechanization of their operations. All three agents worked with Koths on the "Greenhouse Newsletter," a publication for growers featuring articles on plant production techniques, methods, and practices.

Mechanization

Materials handling is a major area of mechanization where growers are advised to use carts and conveyors to move plants from the potting area to the greenhouse and eventually to the shipping room. Movable benches are preferred over fixed benches because they increase labor efficiency and add 10 to 25 percent more growing space to an existing greenhouse. "Movable benches," Bartok points out, "adapt easiest to new greenhouse construction and the cost of this system is approximately the same as a conventional bench system."

Extension specialists have encouraged the use of a narrow belt conveyor that extends between the benches and has reduced the handling time of pot plants.

Extension specialists also advise on cultural problems, and advise growers on the selection of new varieties, adoption of new marketing methods, the control of insect pests, and business management.

The Extension team at the university conducts periodic state and county meetings and arranges tours for growers to see greenhouse operations throughout Connecticut and in Massachusetts. Each fall, a Greenhouse Conference is held at the College of Agriculture and Natural Resources at the university where speakers inform growers of the latest research results and industry trends.

Bartok recently co-authored a comprehensive book, *Greenhouse Engineering*, with Robert Aldrich, Extension engineering specialist, that covers the planning, structure, environment, equipment, remodeling, and energy conservation of greenhouses. Aldrich is currently evaluating the style of greenhouse structures.

Within the next 2 years, a regional Extension program for greenhouse growers will be instituted similar to the recently established New England program for poultry farmers.

Currently, a New England Greenhouse Conference is held every other year; in October 1986, 1,500 growers, Extension, and industry representatives attended the conference in Sturbridge, Massachusetts.

Research Projects

Extension research projects are targeting projects that will make greenhouse operators more competitive and profitable. Researchers are testing new greenhouse coverings such as plastic, glass, or fiberglass.

"We've noted that some of the structured plastic sheets last longer," Bartok says, "and have more insulation value."

A recent research project involves the evaluation of alternative systems of environmental control and heating systems. Another study concerns the conservation of fuel oil. Growers have realized a 50-percent fuel oil savings through tips presented at Extension programs and meetings.

One study centers on a reduction in plant watering. Studies have demonstrated that 80 percent of the water doesn't get to the plants. As a result, savings have been achieved on labor. New lighting studies underway show promise of increasing the time periods of plant growth.

Most growers have not yet undertaken the computerization of their operations. Extension is gearing up to help them accomplish this efficiently.

Future Outlook

Over the last 2 years there has been a 5- to 8- percent expansion in Connecticut greenhouse construction. Growers have enjoyed 3 consecutive profitable years. The outlook for 1987 and 1988 looks bright for increased sales. The Extension team at the university, with its 4-year plan of work for assisting the growers, stresses how to recruit and retain good workers and adopt new production practices. *A*



Extension cost-cutting energy conservation measures initiated by specialists and horticulture agents at the University of Connecticut, Storrs, helped A.N. Pierson, Inc., Cromwell, Connecticut, one of the largest greenhouse operations in the United States, to restore its profitability and make a successful business comeback.

Our Mission: To Inform

36 *Extension Review*

*John Ikerd
Extension Agricultural
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The speaker leaves the podium and heads for the exit of the conference room. Before reaching the door the speaker is surrounded by a group of emotional farmers. Faces red-den. Voices raise in anger. Fingers point like pistol barrels.

Outside, the speaker bluntly responds to the farmers accusations before hurriedly ducking into a waiting airport limousine.

He or she is an Extension economist from another state, who has completed the assigned task and is headed back home. There, the economist will be more diplomatic, and will listen patiently before speaking. But today, the economist is an out-of-town hired gun with a mission to inform.

Both Sides

This economist and many others like him or her are Extension public policy specialists. They play a vital role in the arena of U.S. agriculture. They never write a piece of legislation, they never vote for or against a bill, and, if they are good at their job, they never side on a political issue.

So why are they so maligned? They are the informers. They

sec and tell both sides of the issues. They provide information about costs as well as benefits of policy alternatives. Their information is impartial and unbiased. Thus, they are not for either side. And in politics, if you are not for something you may be considered to be against it.

Why is an informer so vital to American agriculture? Because agricultural policy is important to U.S. agriculture. In a democracy, the development of acceptable and effective policy requires informed citizens. The citizens, acting through elected representatives and organizations, formulate or make policy. Ask any farmer if he or she makes farm policy. That farmer quite likely will say that he or she has nothing to do with the whole mess. But he or she does. Policymakers write and vote for policies that they think their constituents will support. Politicians like to be reelected. So, they try to make farm policy that they think farmers, and taxpayers, will support.

Policy Issues

Surrounding every policy issue is a set of facts, myths, and values. Facts are indistinguishable from myths in the absence of information. In the absence of information, people take

positions based primarily on values. They support positions which are consistent with their generalized, preconceived values, regardless of the facts of a given situation.

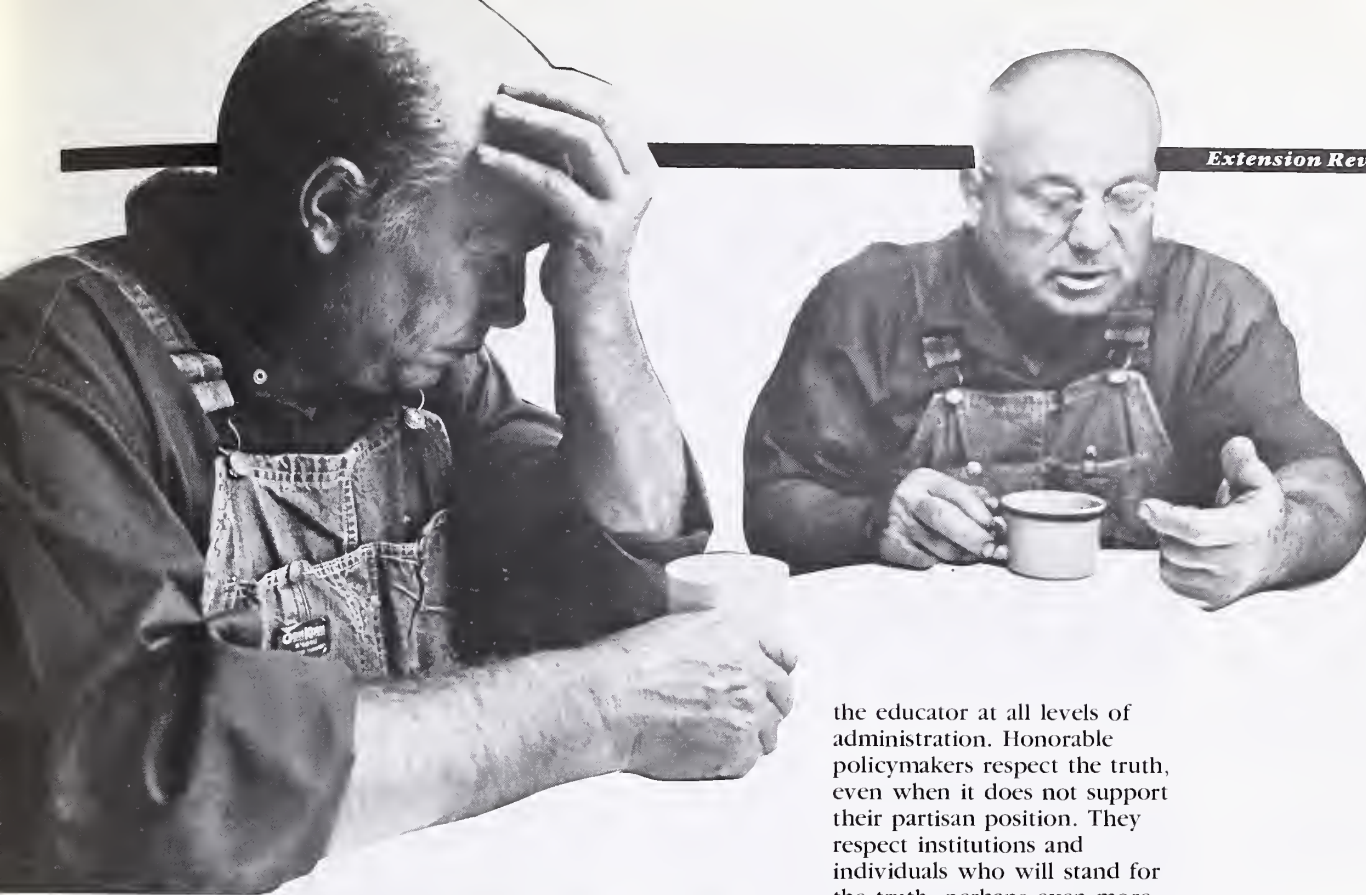
The role of the Extension educator is to expose the myths, establish the facts, and outline alternative solutions and their probable consequences. Values will still play a role in the policy process. However, values will be tempered by the facts of a given situation.

Farmers who oppose more government in general may support a government solution to a particular problem when supplied with facts and alternative solutions. A farmer who feels that government support of agriculture is necessary may oppose a specific policy alternative when supplied with the facts and probable consequences. People need facts to reflect their values in the policy process. They need to be informed.

Role of Extension

The role of the Extension educator is to educate not advocate. Pure policy education must be value neutral and objective. Is pure policy education possible? No, but highly skilled Extension educators should strive for neutrality and





facilitate dialogue among participants. Extension can provide a neutral playing field for constructive debate.

objectivity. Typically, both sides of a policy issue will have some supporting facts as well as myths. The informer is seen as a natural enemy of policy advocates because he presents some facts which support the other side. Thus, criticism of a policy educator is not evidence of incompetence or bias. It may instead be an indication of relevance and effectiveness. Advocates need not oppose those who provide no relevant information.

The policymaker process is special interest driven. However, compromise among special interest groups is necessary to establish public policy. Extension, by providing objective analysis of policy options, is also in a unique position to

Well-trained Extension educators are also in a unique position to analyze the consequences of various policy alternatives to address public issues. These analyses may be carried out at the request of various farm organizations or policymakers. The results of such analyses need not be controversial, at least not in cases where those examining policy have not yet taken an advocacy position.

An effective public policy education program cannot exist without complete understanding and unwavering support of

the educator at all levels of administration. Honorable policymakers respect the truth, even when it does not support their partisan position. They respect institutions and individuals who will stand for the truth, perhaps even more when they realize they cannot be swayed. The uniqueness of Extension in the public policy arena is its position of objectivity. If we allow partisans to affect what we do and do not report, we lose our credibility, perhaps even more quickly with those who are able to prevail against us.

Policy education is an essential element in effective policymaking. Effective agricultural policy is an essential element in a profitable and competitive American agriculture. ▲

Public Policy Education For A Competitive Agriculture

38 Extension Review

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In Minnesota agriculture, Extension is playing a critical role in public policy education programs. Symposiasts on agricultural matters such as the Luther T. Pickrel Public Policy Seminars, are encouraging among diverse participants a reasoned dialogue about differences, and an enhanced understanding of alternatives and consequences.

Photographs courtesy of Donald Breneman, University of Minnesota, St. Paul.

For many industries in the United States, public policy education shapes the economic environment. Nowhere is this more true than in agriculture. The significant expansion of commodity supplies worldwide, partly a result of American farm policy of the 1970s and early 1980s, has resulted in increased competition and lower prices.

Making agriculture more responsive to internationally determined competitive forces was a major goal in the 1985 Food Security Act. In 1985, a conscious decision was made to remain internationally linked rather than continue a farm policy that ignored international supply, demand, and price conditions. The former policy, it was felt, continued to put United States agriculture at a competitive disadvantage vis-a-vis producers in other countries with specific reference to product prices.

Responses To International Markets

The two specific responses in the 1985 legislation to international market forces were: 1.-significant reductions in the loan rate for agricultural commodities, and 2.-expanded export incentives including concessional sales (payment in-kind) and low interest credit for selected buyers.

Reductions in the loan rates were made not only to allow American grain to be priced at levels more consistent with world market prices, but also to reduce the incentives to expand production in other countries that were provided by the higher-than-world-market loan rates.

Attempts in the 1985 legislation to enhance exports through concessional and credit sales were an explicit recognition that the U.S. market share of agricultural exports had declined. The 1985 Farm Bill attempted to offset the impacts of a high valued dollar with low interest rates, export incentives, and concessionary pricing.

Target prices were left unchanged for the first 2 years of the 1985 legislation and, for subsequent years, were adjusted downward modestly. The larger deficiency payments which resulted, combined with slow recovery in export sales, are the major explanations for the dramatic increase in 1986 federal budget expenditures for farm programs. In essence, the government is attempting to replace a part of the income that farmers are not receiving from the market; if such compensation did not occur, the financial stress and adjustments in agriculture would be much more severe than those currently being encountered.





Commitment Necessary

The third response in farm legislation to the internationally competitive market, often overlooked, is the commitment to agricultural research and education. Agriculture must develop and adopt new technology to remain cost competitive. Agricultural research must continue to focus on increasing productivity. And there must be a focus in the agricultural sector on economic, environmental, social consequences and adjustments as a response to changes in the economic and political climate.

Extension Education And Farm Programs

Because of the controversial nature of most public policy issues, policy education programs must be implemented with balance and objectivity. To maintain objectivity, the standard educational technique has been the classic public policy model. This model recommends the identification of alternative public policy options and the discussion of the consequences of each option without recommendation of a particular alternative.

This approach is being demonstrated in Minnesota by the public policy symposiums which were coordinated until recently by the late Luther T. Pickrel and continue today as the Luther T. Pickrel Public Policy Seminars.

Pickrel's style and objective with these seminars was to tackle controversial issues in a nonconfrontational fashion. Speakers obviously had different viewpoints, but the program included participants with a wide range of vested interests. The audience included producers, consumers, activists, commodity and farm representatives, agribusiness persons, university professors, and congressional and legislative policy makers.

An Enhanced Understanding

The result was reasoned dialogue about differences (and, in some cases, similarities) in perspectives, viewpoints, and conclusions. The focus was not on obtaining a consensus around a "preferred" policy alternative, but on enhancing the understanding of the alternatives and consequences. This enabled later dialogue and discussion by participants to be more reasoned and factually based. The underlying assumption of this type of public policy education program is that a better informed citizenry will result in better public policy.

In Minnesota and many other states, similar public policy education programs are being carried out on such issues as state and federal taxes, international trade, economic development, and financial stress.

Equally important, once a state or federal policy alternative has been chosen, Extension has played a critical role in informing those impacted about the effect of the policy will have on their daily lives.

Helping With Consequences And Impact

Recent examples of Extension activity in this area include helping farmers to participate in the food and feed grain programs, and make decisions in the dairy herd termination and conservation reserve programs.

Thus, in the public policy area, Extension education programs play a critical role in informing the public about alternative policy options and their consequences. Once the policy choice has been made, Extension programs help inform those impacted to make better management decisions—decisions that recognize the public policies in place. In both roles, Extension public policy programs contribute to a more competitive, more profitable agriculture. *A*

Polymaking Texas Style

40 *Extension Review*

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During the 1980s, it has not been unusual for government programs to account for more than half of the incomes of Texas crop producers. As a result, policy education plays an important role in Extension programs in Texas. The policy education program is not limited to one or two individuals, but extends to both commodity and farm management specialists. The education program at Texas A&M University is backstopped by a robust policy research program conducted at a unique institution—the Agricultural and Food Policy Center (AFPC).

A component of the Texas A&M University System, the AFPC is a site where Extension operates as a co-equal partner with teaching and research. This emphasis on Extension sets the AFPC apart from policy centers at other universities which are primarily oriented toward research. The emphasis on Extension also means that research at the AFPC has an applied orientation where policy education models are designed to answer questions not only on policy impacts on agriculture as a whole, but also, with the help of Texas farmers and ranchers, on “typical” farms in the state.

Farm programs directly impact farmers’ planting decisions as well as how and when to market. Livestock and poultry producers recognize that farm programs play a major role in determining the price they pay for feed, which frequently accounts for 50 percent or more of their costs. Also, feed costs indirectly influence livestock and poultry prices.

Each year when farm programs are announced, analysts at the AFPC begin to develop their farm program participation package. Policy specialists, commodity market specialists, and farm management specialists, team up with research staff to design decision worksheets that farmers can utilize either with a pencil or a computer. In major crop producing counties Extension agents work directly with farmers to evaluate their decision options. The agents use methods that range from group meetings to individual consultation using the computer.

Polymaking Inputs

Wise policy decisions depend on policy makers knowing the consequences of available alternatives. Policy makers of direct interest to AFPC programs include individuals who are active in farm and agribusiness organizations, as well as elected representatives.

Policy options must be analyzed for their implications for variables such as export demand, domestic use, supply, commodity prices, farm income, and government cost.

Objective analysis of the consequences of policy options is important because of the prominence of advocates in the policy process. Advocates, by nature, generally present only one side of the issue—the side that favors their position.

Policy researchers and Extension economists try to avoid talking about advantages or disadvantages of particular

options. What may be an advantage to one group or organization may often be a disadvantage to another. For example, gains by grain producers are often at the expense of livestock and poultry producers. For these reasons, those involved in policymaking are frequently embroiled in controversy.

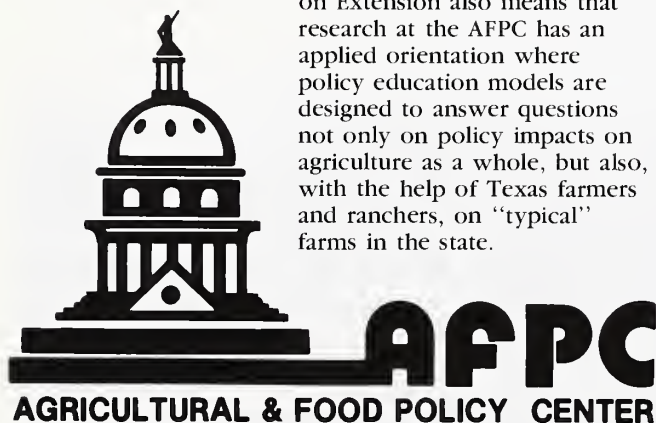
Measuring Success

Success in policy education is difficult to measure because choices among policies depend on values, and differences in values lead to differences in policy preferences.

Our best measure of success is the use of our products—are they used in decisions? Farmers often use our participation decision worksheets and computer software and ask for them soon after the programs are announced. Farm organizations request studies of particular issues. Some examples are the effects of soil conservation requirements under specific farm programs, and the break-even bids required for conservation reserve program participation. These issues, and many others, have been studied by the AFPC for particular farmer interest groups and the studies have been used in the policy decision process.

The Future

In the future, there will be more emphasis on analyzing livestock and poultry producer impacts. There is an increasing concern about the impacts of Federal programs on the number and size of farms. AFPC staff are aware that farmers will have to make program participation decisions each year under somewhat different programs and different economic conditions. The decision aids of the Agricultural and Food Policy Center will be there to help. ▲



Education Program At The Policy Center

The cornerstone of the Texas policy education program is timely analysis of relevant issues. Relevance is determined by issues on which decisions must be made. These decisions are of two basic types. The first involves changing policy toward agriculture and rural America. The second involves adjusting the production, marketing, or development strategies to federal programs that have been enacted.

How National Policies Affect Agricultural Competitiveness And Profitability

Extension Review 41

The Kansas Cooperative Extension Service's agricultural policy education program involves 25 seminars a year held on a multicounty basis for a cross-section of the state's agricultural leaders. Some of the topics covered have included: who will control U.S. agriculture, use-value appraisal of Kansas farmland, alternatives for 1985 farm legislation, and midcourse corrections in the 1985 farm bill.

Governor Turns To Extension

Because of the reputation of the Kansas agricultural policy education program, Governor Carlin turned to Extension. He was concerned about the interrelationships and inconsistencies within existing agricultural policies and their potential impacts on competitiveness and profitability within agriculture. He asked Extension to assist him in setting up a program within which participants could examine the impacts of national policy on agricultural competitiveness and profitability.

While the Kansas policy specialists were helping him in program planning and development, the Governor appointed a participant work group of key agricultural leaders in the state. Extension specialists provided technical input on several policy factors. Participants then discussed impacts of these factors on competitiveness and profitability and presented their conclusions to the Governor. A partial listing of these policy factors follows.

Policy Factors Considered

- The more unstable agricultural policies become, the more time individual farm operators must devote to farm program and credit activities.
- Legislative amendments adjusting farm bill target prices or commodity loan rates have increased uncertainty and risk of financial failure for individual agricultural producers and have resulted in inefficient use of public resources.
- Embargoes and other inconsistent short-term policies have greatly added to the instability of the policymaking process.
- The current policymaking process provides for incremental development and enactment of legislation, which results in a reluctance to respond to early market signals.
- Political ideologies of persons managing farm programs and the large number of players with vested interests often impede the development and implementation of coordinated production and stocks policies. Cases in point are the grain and dairy programs.
- The goals of agriculture-related programs are inconsistent; for example, some tax policies stimulate investment in agricultural production while farm programs attempt to reduce such behavior.
- Programs developed and managed solely through the current political process are—by nature of the system—made to protect short-term political interests.

Input Into Legislation

Based on the technical input from the Extension policy specialists, the governor's work group surfaced development of long-term policy as a critical issue in achieving agricultural competitiveness. They communicated this message to their national legislators. The result was wording within the 1985 farm bill that calls for creation of a bipartisan broad-based quasi-independent agency. Its function will be to manage farm programs within broad guidelines and in conformity with the intent to bring stability and a long-term planning horizon to agricultural programs. A

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International Trade— Challenge To Extension

42 Extension Review

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Last winter in Milledgeville, Georgia, farmers and county Extension agents hashed over trade laws, marketing techniques, and even the value of Japanese yen during the first Georgia Agricultural Congress.

No matter how far-ranging the topics, participants all came back to one question: Can the United States face a growing international market place for agriculture?

Extension Involvement

Right in the thick of the discussion were Georgia Extension Service specialists. Keith Searce, Extension economist, pulled together the 3-day program to assess the agricultural situation and find out how farmers feel about it. He brought in other Extension economists, speakers from the Georgia Department of Agriculture, Georgia Farm Bureau, the University of Georgia's Office for International Development, Clemson University, Georgia Experiment Stations, and the Library of Congress.

Speakers helped these farmers and agents wrestle with the key decision of whether American agriculture should take the risky road toward freer markets or the safe road toward more government involvement.

"One result of working with the conference is that elected officials and other agricultural leaders see how Extension can help educate people in this area," Searce says.

Another is that Extension agents have requested training on international trade. "Extension people are intrigued," Searce says. "They are getting questions now and they want to know how they can help people. They see it as a positive move in agriculture. They're beginning to network more and pull together the pieces of how to help."

Options Available

"It's a choice between an uncertain but profitable market for the most efficient producers if we went international; or a shrinking but stable and conservatively profitable market if we went domestic," said John Ikerd, Extension agricultural economist, of the University of Georgia.

This debate paralleled a similar discussion in Washington that will determine farm export policy. "The choice will be made for you or by you, and it will be made within the next 4 or 5 years, maybe sooner," Ikerd said.

Current world trade negotiations bear out Ikerd's predictions, as the current Administration has proposed that all farm subsidies be phased out over a 10-year period.

Of this option, Ikerd told the group, "One road is toward free trade, allowing the prices of agricultural commodities to reach a level that would get rid of surpluses. That road would eventually lead to a growing and profitable agriculture, but it is a highly risky route. No one is really sure if we can travel that road or if it goes just around the bend and drops off into nothingness."

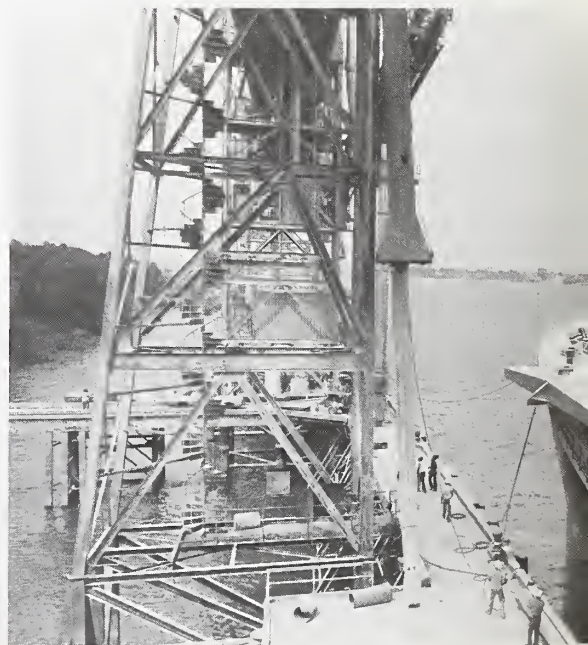
Whatever the outcome of the negotiations, these Georgia farmers have had a chance to think about the possibilities and to voice their opinions to their representatives in Congress.

Searce sees such discussions as a viable "classroom" for the Cooperative Extension System. Is the international trade issue a new direction for Extension layered on top of an already overloaded system? Searce doesn't think so.

"Agricultural policy has simply moved into this arena. My interest is still the same—how we can get our agricultural policy to function. A much larger portion of our production is going to the world market now, we have to recognize the field.

Agricultural and Trade Policy

"I don't see this conference (or other Extension work in international trade) as anything new or different from our continuing Extension work in agricultural policy," Searce says. "These issues are just new areas on how we pursue ag policy. In various parts of the country, it takes on different dimensions, depending on the agricultural products, markets and the Extension personnel involved. Some approach international trade from a humanitarian standpoint, others from a cultural view. My approach is ag policy."



One panel discussion at the conference dealt with the current trade policy, and the topic brought out strong reactions. James Lee Adams, a farmer from Camilla, Georgia, told the group, "Right now we have an absolutely incoherent trade policy. It's like having a foot on the brakes and the gas pedal at the same time. I don't know if we have the willingness of Congress to stick with us to buy the markets back but that's what it would take. There's a risk any way you go. You're the ones who need to make the decision. We need a coherent policy and you might be the folks to put it together."

Some spoke for continued subsidies, others argued for free markets, many claimed reality has to be somewhere in between. Searce and his Extension colleagues didn't choose sides on the outcome, but they did fight for the right for farmers to take part in such discussions.

"Agricultural policy has changed so dramatically," Searce says. "What future does agriculture have if not in international trade? We're exporting 60 percent of what we produce. My sense is that Extension has to get involved from the ag policy standpoint."

Ag policy is really an attitude, a state of mind voiced by an administration. Can panels and discussions and hearings really change anything? The Georgia Agricultural Congress believes it has made a difference and is continuing to do so.

One county has invited a speaker from the state department of agriculture to tell them what they have to sell and how they can sell it. This speaker has visited with them several times.

"Year Of The Exporter"

A group from south Georgia traveled to Atlanta to meet people who can work with them on international trade.

The Agribusiness Council and the state department of agriculture are working more closely with Searce on what the Georgia governor has declared as "The Year of the Exporter." The panel members are considering putting on more workshops statewide, and they've also involved people from the Georgia Department of Industry and Trade and the Georgia Agribusiness Council.


The regional meetings will move beyond the policy issues and get to work on the following questions. What people can help get farmers and businessmen involved in international trade? What can agencies do about the problem? What events and people are influencing the international market now?

Results

Searce has already seen Georgians translating international marketing into sales. He cites specific cases, including a south Georgian who bought an old service station, put up some sheds to package honey, and shipped it to schools. Then he put a honeycomb in the jars and sold them to outlets in Atlanta. Finally, he involved a food broker. Today he's shipping his honey to Saudi Arabia.

The story of this Georgia exporter proves it can be done. But it will take coordination, knowledge, and resources to stay on top of a highly changing field. Searce thinks this could be handled by establishing in Georgia a proposed Center for International Agricultural Marketing and Trade.

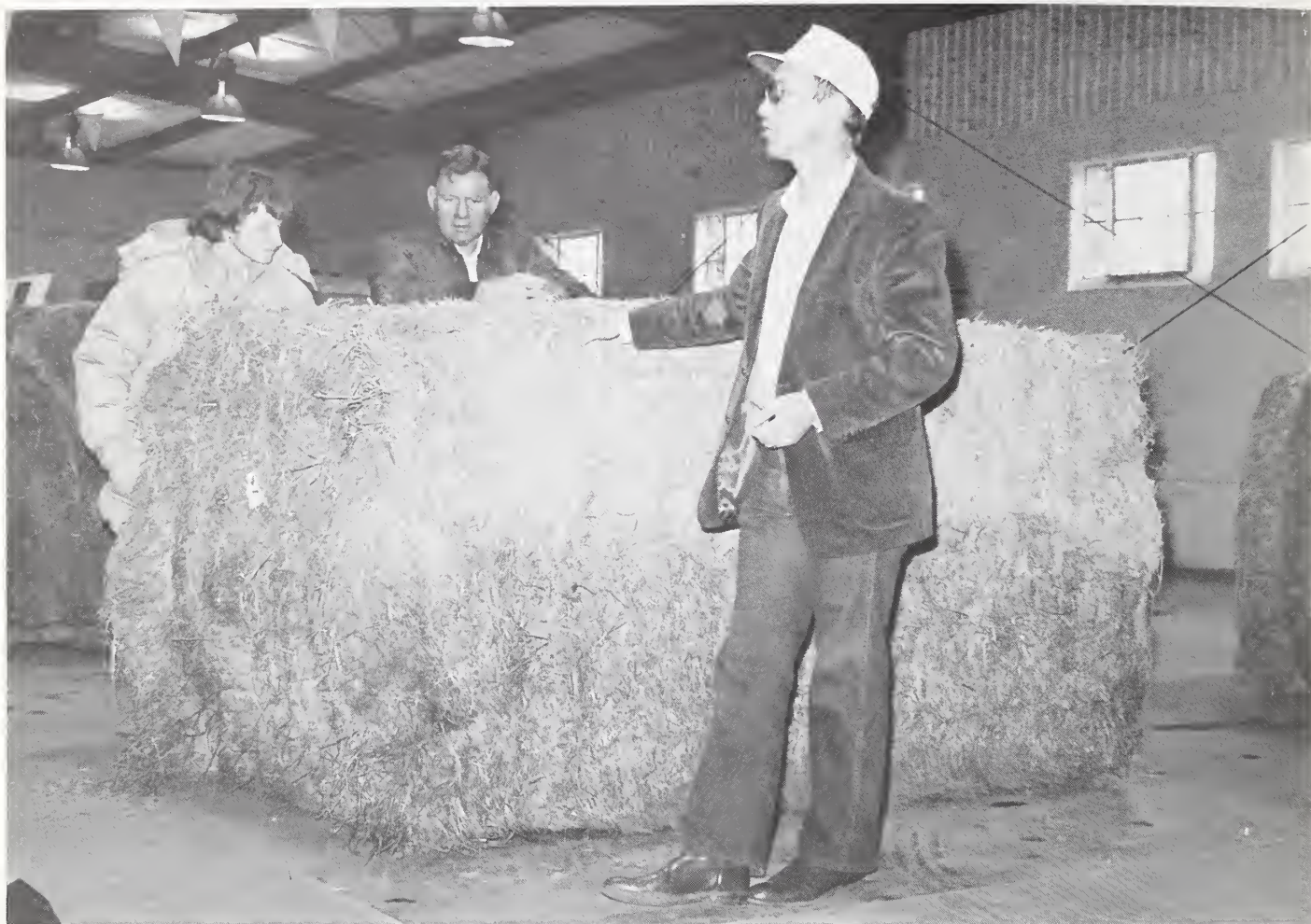
And, Searce would like to see the Georgia Extension Service take the lead through its traditional role as liaison between resources and counties—getting the information where it needs to go through the county agents.

"Extension can and should be doing this work. We have the network in the states, we can use that network effectively. All we can do is serve as an idea-generating factory. And we can be very good at that," Searce says. 



HAYMARKET—Buyers And Sellers Benefit

44 *Extension Review*



Robert Keating
*Extension Managing
Editor,
Agricultural Press
Services
and
Gerrit Cuperus
IPM Specialist,
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Commercial alfalfa producers were frustrated for many years: they had high-protein, weed-free hay to sell, and they couldn't attract a premium price through standard market contacts in their region.

Alfalfa buyers in the dairy and horse industries also were frustrated: they often were unable to locate the high-quality alfalfa they needed. Many times they had to pay more than they wanted for low-quality forage.

That frustration has subsided for many Oklahoma alfalfa producers, plus buyers in 25 states, since the inception of HAYMARKET, a computerized marketing system for linking sellers and buyers of alfalfa hay.

For 5 years, Oklahomans listing alfalfa on HAYMARKET have been rewarded with higher prices for producing high-quality hay. HAYMARKET is sponsored by the Oklahoma Alfalfa Hay and Seed Association in cooperation with the Oklahoma State University (OSU) Cooperative Extension Service. OSU compiles and distributes the listings and furnishes a HAYMARKET coordinator, who assigns third-party graders to appraise and take samples from alfalfa lots being offered for sale.

Origination

The concept of the HAYMARKET program originated with

an OSU Extension group working in the area of alfalfa integrated pest management (IPM). Planners included Gerrit Cuperus, Extension IPM coordinator; Clem Ward, Extension marketing economist; Loren Rommann, Extension forage specialist; Bob Treadwell, area Extension agronomist; and Ron Justice, county Extension director in Grady County, the top commercial alfalfa producing county in the state.

Soon, many more Extension specialists, representing the disciplines of agronomy, animal science, agricultural economics, agricultural engineering, entomology and plant pathology were involved in aspects of HAYMARKET. And many more

area specialists and county agents became involved. County Extension offices serve as contact points between producers and the HAYMARKET coordinator.

HAYMARKET proves the value of making eager buyers in the dairy and horse industries aware of the availability of highly desirable alfalfa. And it has strengthened incentives for producers to maintain management practices that result in a high-quality product.

Rewards

Producers have an opportunity to be rewarded for good planning and timely management. And, for offering hay that is attractive visually and nutritionally.

Listings on HAYMARKET, which is available to buyers via either mail-out or electronic access, include each producer's name, address and phone number; the number of tons in the lot; type of packaging; which cuttings are represented; maturity stage; color; type and amount of foreign matter; and test results for crude protein, moisture content and total digestible nutrients.

Ward, OSU's marketing economist working with livestock and forages, analyzes price premiums for quality characteristics such as high protein, absence of broadleaf weeds and grasses and most efficient bale type for handling by buyers.

Ward found price premiums were higher during years when available hay supplies were smaller rather than in wet years when production rose far above demand. In the 1984-85 marketing year, buyers paid \$3.11 per ton more for each 1-percent increase in protein. During the next year—a very favorable production season—the overall price structure decreased significantly and the premium for higher protein disappeared.

Although a larger price premium may not be apparent some years, a producer who manages his or her alfalfa program for production of higher-quality hay probably will be able to market hay more quickly, Ward explains.

"Producing high-quality alfalfa may mean the difference between selling it or still having it on hand at the end of a year when hay supplies are abundant," says Ward.

Comparing alfalfa with different amounts of foreign matter produced similar trends as those noted for protein.

Packaging

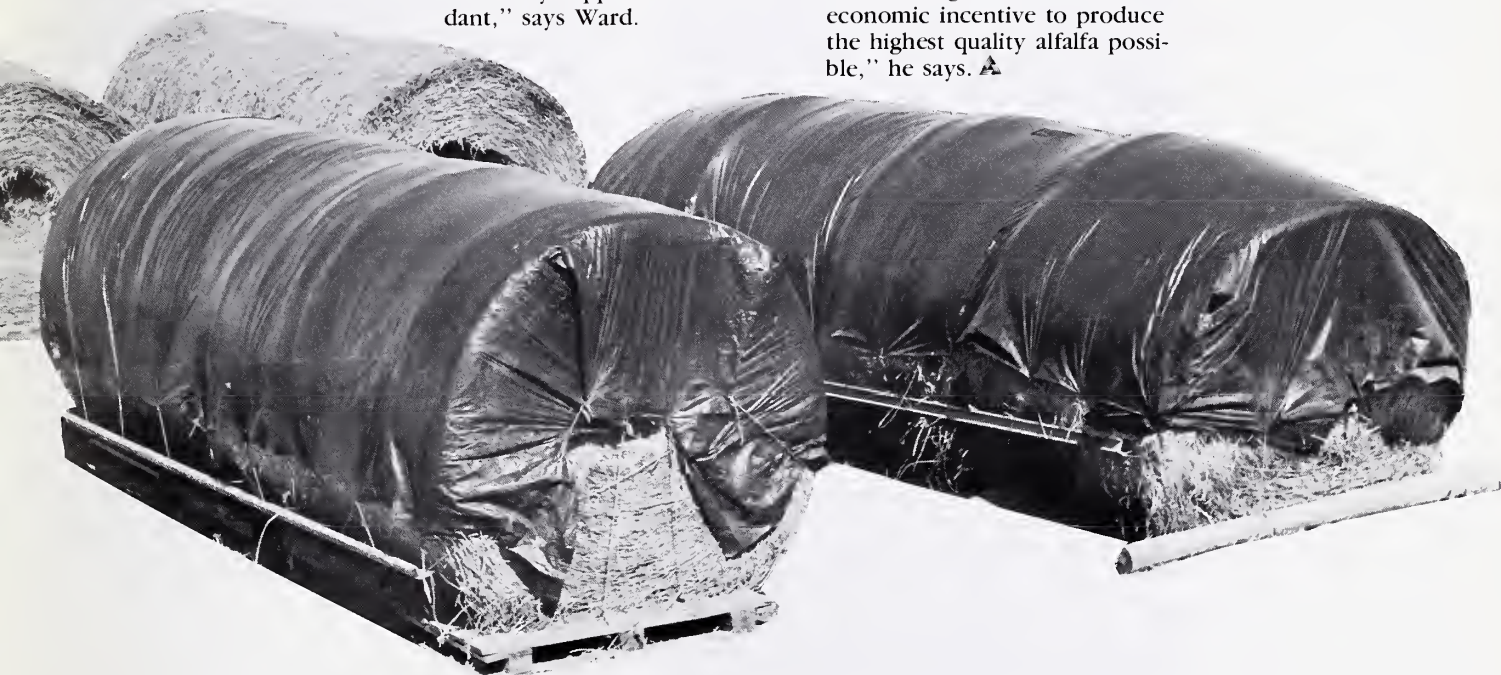
Price premiums continued through each year for alfalfa packaged in large square bales or small square bales compared to large round bales. Price premiums between large square bales and small square bales actually were reversed from one year to the next, indicating a shift in preference of buyers who utilized HAYMARKET.

Buyers' preferences indicate to producers the desirable characteristics of alfalfa they should be emphasizing to make their hay more marketable in a competitive business.

HAYMARKET exposes producers' hay to more than 800 buyers in 25 states, Ward points out. Since listings provide test results for several quality factors, buyers can select the quality of alfalfa they want to buy, and they can match price and quality.

"That selection should allow growers of higher quality alfalfa to be rewarded for making proper management decisions. Therefore, growers have an economic incentive to produce the highest quality alfalfa possible," he says. **A**

Oklahoma alfalfa producers and buyers in 25 states are now happily linked by the ongoing computerized marketing system: HAYMARKET. The concept of the HAYMARKET program, which is sponsored by the Oklahoma Alfalfa Hay and Seed Association, originated with an Extension group at the Oklahoma State University working in the area of alfalfa integrated pest management (IPM).



Outlook Emphasis In Iowa

46 Extension Review

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Economist,
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Economics and
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Iowa State University,
Ames

Price corn now or later? Store soybeans or sell at harvest? What price and profit levels are likely next year on cattle?

These are some of the important and continuing questions of many Iowa farmers, agricultural advisors, and agribusiness persons.

As far back as the mid-1920s, the Cooperative Extension Service and Economics Department at Iowa State University has responded to this need with an ongoing program of market information and analysis. For the past 20 years, the author and Extension economist Robert Wisner have shared primary responsibility for the outlook program.

Changes In Economic Setting

The economic setting for production, marketing, and pricing decisions has changed over this period of time. And we have adjusted our outlook program to meet the changes. Commodity prices have become much more volatile, adding to the price risk in farming. Marketing and pricing decisions are more difficult than before and more critical to the financial results of the farm business.

Our program objective is to make Iowa crop and livestock producers and related agribusinesses aware of market information sources, to increase their understanding of factors that influence commodity markets, and to enable them to develop more accurate expectations and forecasts of crop and livestock prices.

Iowa agriculture is not highly diversified. Our analyses emphasize corn, soybeans, hogs, and cattle. World economic and agricultural conditions, foreign trade developments and policies, and U.S. farm policies and programs all influence U.S. and Iowa commodity markets, and their impacts are included in our market analysis and outlook program. One focal point of the program is a twice-monthly market analysis newsletter, *Iowa Farm Outlook*. It has been a part of the program under that title since 1943, and under a different title since 1923.

Probably the broadest dissemination of outlook information is by radio. A 6-minute market analysis/outlook tape is prepared each Monday for distribution to 65 radio stations in the state. Each Friday, two 3-1/2 minute tapes are prepared that summarize the week's activity and price trends in the grain and livestock markets. The tapes, part of a 15-minute program by radio-TV Specialist, Roger Brown, go by satellite to public radio stations across the midwest.

Outlook information is disseminated in several other ways: news releases used by smaller daily papers, weekly papers, and some agricultural newspapers; special articles for agricultural newspapers and magazines; electronic information system (Agri-View) carried by Iowa Public


Television; short code-a-phone reports that can be accessed by callers that summarize and briefly analyze major crop and livestock reports from USDA's National Agricultural Statistics Service; short outlook statements published each month in Agri-News (a report of the Iowa Agricultural Statistics Service); frequent interviews with news wire services; and many phone, office, and letter contacts.

We also hold meetings to provide market analysis and outlook information to our clientele, usually as a series of meetings with professional agriculturalists who work with farmers in business and advisory roles (lenders, agribusiness persons, Extension workers, farm managers, and others). The meetings are held in the early fall for 3 to 4 hours and include information on market situation and outlook, pricing alternatives, farm programs, and management considerations. Outlook information is also presented to producers, agribusiness persons, and groups at other local, area, and statewide meetings, often with other marketing, management, or production programs. In 1985 to 1986, outlook information was presented at 100 local, area, and statewide meetings, with attendance of approximately 5,700.

A related Extension activity of long-standing at Iowa State University is a comprehensive and timely program of current market news dissemination. Under the direction of Market Editor Dallas McGinnis, commodity and financial information is broadcast statewide and beyond on the university AM radio Station, WOI.

Program Impact

It is hard to assess total impact on clientele of the Extension program in market analysis and outlook. Because much information is distributed through media, there is little basis for estimating the total number of persons who use the information, how particular decisions were influenced by the information, or the specific economic consequences of decisions based on the information.

Limited formal evaluation of meetings and of the publication, *Iowa Farm Outlook*, has been positive. This is also true of the informal response from clientele. A research study, based on a sampling of *Iowa Farm Outlook* subscribers, reported that farmers liked its analysis of factors affecting markets because the publication "gets to the point quickly, and can be read and retained for referral." And a letter from a user of our outlook information stated, "You guys are very special people in my book. Your reports in *Iowa Farm Outlook* are outstanding. Please keep on doing what you are doing." 

Producer Marketing Clubs: The Kansas Experience

Extension Review 47

American farmers manage their "family farm" like a "small business" if they are going to survive in today's economic environment. But first they must plan and execute a marketing strategy.

To be successful, marketing must be more than just selling at harvest or when bills come due. A marketing strategy requires price forecasts, integrated financial plans, a complete production record system, an assessment of the firm's risk bearing capacity, and an evaluation of the relevant marketing alternatives.

Relatively few farmers have a marketing plan and the large majority price their commodities at delivery. In Kansas, less than 10 percent of the crops are forward priced and only 6 percent of the cattle producers have ever hedged with futures.

Necessary Marketing Tools

Why is it that so few farmers take advantage of all the marketing tools available to them? If traditional educational techniques (seminars, home study materials, Extension marketing classes) are not effective intervention mechanisms, what are the implications for Extension marketing education programs?

In Kansas, we have retained and expanded our traditional marketing education programs but have found a new way to organize our audience. Producer Marketing Clubs have been established in over 50 counties in the state. County agents, along with area and state specialists, support the activities of these clubs by providing leadership, encouragement, market information, speakers, videotapes, teleconferences, handouts, and formal instruction.

One key feature of these producer clubs is that they are self-supporting and self-governing, and farmers learn by "test marketing" limited quantities of commodities.

Club Activities

Club members are not required to do anything different on their own farm, but as a group, the club is expected to follow and interpret market developments, develop price forecasts, estimate production costs, track and chart futures and local basis information, evaluate the appropriate marketing alternatives, and execute a marketing plan.

Producer Marketing Clubs have been operating in Kansas since 1984. Generally, a county Extension agent organizes the club in cooperation with one or more agricultural lenders. The club's membership averages 15 to 20 persons or couples, most of which are full-time farmers/ranchers. Generally speaking, the clubs collect \$80 to \$100 per


person to finance the club's market positions in two or more commodities. Evening meetings are held about every 2 weeks and run from 2 to 3 hours. There is a definite seasonal pattern to the clubs' activities with most clubs beginning their meetings in October-November and tapering off in April or May.

Many of the clubs have subdivided their membership into commodity subcommittees. Each subcommittee is responsible for a single commodity and is charged with keeping updated futures and basis charts, reporting on developments affecting that commodity and proposing appropriate marketing strategies.

One of the organizational problems that has yet to be solved is what to do with a club once its members become sufficiently experienced and confident. Since clubs are predominantly a learning opportunity not a marketing agency, and given Extension's educational mission versus providing consulting services, it's been proposed that mature marketing clubs continue their association but with only limited participation from Extension. Because of the large numbers of nonmarketers, Extension agents and their cooperating lenders have been encouraged to start new clubs once they "graduate" their current club's members.

Learning by doing can be an efficient method of instruction. While speculation is an unavoidable temptation, the primary focus of the club's activities must be to simulate actual marketing decisions. This requires that: (1) everyone be responsible for working out their own costs of production for each of the commodities traded; (2) the club keep track of futures and basis data for each commodity (teams of two-three members should be assigned to each commodity); (3) the club develop an independent market outlook and integrate price expectations into the club's marketing objectives; and (4) the club evaluate all relevant marketing alternatives.

The market club experience seems to work best over a limited time period of 4 to 6 months scheduled from October through March. Ideally, marketing club graduates will continue to meet (perhaps with less frequency) at a specified time and place with the objective of working up and executing marketing plans for their own production. Extension personnel could continue to meet with them on an infrequent basis, but hopefully the members would have developed enough internal structure/routines that they can operate on their own without formal Extension leadership. This would, in turn, free up Extension personnel to initiate a new educational marketing club next season and start the cycle all over with another group.

Clearly, the marketing club activity enhances farmer marketing skills and in turn contributes to profitability. 

*William Tierney
Extension Agricultural
Economist,
Kansas State
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Preparing Youth For The 21st Century

48 Extension Review

Allan T. Smith,
4-H National Program
Leader, Science and
Technology,
Extension Service,
USDA
and
Stu Sutherland
Public Affairs
Specialist, Extension
Service, USDA

The 21st century is not really so far ahead for 4-H'ers—many of them won't hold their first professional job until then.

A new emphasis is emerging in 4-H, the Nation's largest informal education program for youth. 4-H calls it "Sci/Tech"—shorthand for scientific and technological literacy education. This timely effort, an important part of the Extension "Building Human Capital" National Initiative, promises to enhance the 4-H program's ability to prepare youth for living and working in our emerging technological world.

New and developing 4-H Sci/Tech programs will produce positive attitudes toward the study of science and technology and familiarize youth with the important contributions of sci/tech career fields.

Lead Development

Four USDA-funded cooperative agreements with land-grant universities are taking the lead in 4-H Sci/Tech development. State-funded programs will build on and round out these federally funded efforts. A network of Extension staff interested in participating in 4-H Sci/Tech development is now being formed. And, two nationwide staff development efforts are planned.

4-H programs in at least 10 states will conduct National Science Foundation Young Scholars Programs to involve

youth in residence programs on campus in summer, learning about science careers and working one-on-one with scientists.

4-H Sci/Tech Efforts Underway

At USDA, Science and Education, Higher Education, and Extension Service have now funded a series of four related cooperative efforts to develop important parts of this new 4-H Sci/Tech effort. All the final products of their work will be introduced to State Extension staffs in December 1989. Expected outputs include:

- **Career Preference Computer Program**—Penn State is developing materials to enable youth to identify those career clusters which most likely fit their personalities and interests.

- **Sci/Tech Instructional Strategies**—Penn State is developing training materials for staff and volunteers in strategies proven most effective for accomplishing 4-H Sci/Tech objectives.

- **Database of Non-Extension Materials And Cooperators**—Penn State will identify existing materials, approaches, and cooperators from outside Extension which can be integrated into 4-H science and technology programs.

- **Sci/Tech Curriculum Scope And Sequence**—ES 4-H Staff are completing "scope and sequence" for 4-H science and technology education to guide

curriculum developers, considering both the intellectual capabilities of youth at various developmental stages and the hierarchical nature of science education.

- **"Model" 4-H Sci/Tech Projects**—Wyoming is testing a series of innovative food and agricultural science and technology projects and working with ES 4-H to develop a how-to guide for 4-H curriculum developers for the Sci/Tech approach.

- **Self-Determined Career Education Model**—Missouri and North Carolina are testing a model including employment profiles; listing of academic specialties and various media; and focusing example materials on career opportunities in food and agricultural sciences.

Current Projects

In fiscal year 1986, the nationwide 4-H program had youth busy in over 8.5 million projects. Of these, 88 percent were projects solidly based in the sciences. Projects based on the biological sciences accounted for 55 percent—not surprising considering the strong Extension agricultural and nutrition subject-matter base. Another 10 percent of enrollment is based on the physical sciences, particularly engineering, energy, and soil and water. And some 23 percent of enrollment stems from the social sciences, including citizenship, leadership, economics, and communications.

Key To Success

The key to the success of the 4-H approach to science education is hands-on, practical real-world application of scientific knowledge.

4-H gardening is a good example. Taught the old way, it is a straight forward "how to produce" experience, where a 4-H'er learns to produce his or her very own garden. But taught the 4-H Sci/Tech way, 4-H gardening experiences manage to open the doors to a host of scientific subjects.



Scientific Expertise— Vital To America's Future

Scientific and technical expertise is vital to our Nation's competitiveness. Yet agriculture's supply of scientists and professionals is declining. Between 1977 and 1984, while overall college enrollment increased, baccalaureate enrollments in agriculture at land-grant universities declined 31 percent.

The decline in enrollment in food and agricultural sciences is occurring at all degree levels. Foreign students earn 32 percent of the Ph.D.'s in agriculture and natural resources. The remaining share amounts to just 680 new Ph.D.'s annually, about 14 per state. Young minds must be attracted into agricultural science and technology careers; and the process must begin quickly.

A recent National 4-H Council survey showed that 4-H projects do impact on participants' career selections. Seventy-eight percent of respondents—state and national winners in general agriculture programs—said 4-H had influenced their career choice.

Space Technology

4-H's newest space project "Blue Sky Below My Feet—Adventures in Space Technology" was released in the fall of 1986.

Designed for 4-H'ers ages 9 to 12, this multimedia curriculum package helps youth explore space science and technology and its relationship to life on earth.

Three 30-minute video programs, a member workbook, and volunteer leader guides focus on: Gravity and Forces; Fiber and Fabrics; and Food, Nutrition, and Fitness. The video programs feature astronauts, and other scientists and nutritionists in laboratory research.

Developed and produced by a public-private team of educators, the "Blue Sky" project is being used nationwide in 4-H clubs, 4-H camps and workshops, with other youth organizations, and as a school enrichment project.

Focus On Science

About 2.1 million 4-H participants are involved in over 51,000 class units designed for school enrichment. While not all of these programs are food and agriculture specific, most contain subject matter that enables youth to become aware of science and technology aspects of food and agriculture careers. Some typical examples:

- The 4-H embryology project, with Extension providing egg incubators and project instruction, continues to grow nationwide with 251,000 youth participants. This project now includes growth and development, nutrition, agriculture, and careers.
- Plant science school workshops in New Jersey attracted over 47,000 youth in horticulture-related skills training.
- Sixty-nine outstanding secondary school juniors and seniors


Youth And Science

More than half our high school students drop out of science and mathematics by the 10th grade. Insufficient preparation, and lack of information on agriculture as a science, pose problems in recruiting youth. A scientific mindpower base is critical to the well-being of our country. It is crucial that schools inculcate positive attitudes toward sciences and technology by the time youth enter junior high school. National Science Foundation studies indicate that school science experiences for 90 percent of all students are restricted to a page-by-page consideration of content found in textbooks. This approach will not attract youth who lack positive attitudes toward science and technology.

4-H programs can provide a better option. 4-H youth use science to solve their own real-world problems. 4-H programs could motivate youth to choose the food and agricultural sciences rather than competing disciplines.

each received \$100 scholarships for career program training on the University of Nebraska campus. After their training, these 4-H'ers worked with 4,800 youth on 4-H projects in veterinary science, animal science, agronomy, food science, forestry, fisheries, wildlife, and entomology.

- Florida piloted an urban forestry program for children in grades 3 to 5. Pre- and post-test scores indicated a 65 percent increase in forestry knowledge for the 400 youth taking part. The project will be offered to all Florida elementary schools.
- In a Delaware school enrichment program 1,500 youth were able to identify six examples of marine life found in the ocean and bays and 1,000 youth could identify uses for the marine life.
- In Tennessee, Nebraska, and the Virgin Islands, 4-H entomology and apiculture projects were used to interest youth in pursuing a course of study in agriculture and other biological sciences. Over 7,500 youth have participated in this school project.

4-H's future is focused on preparing today's youth for tomorrow's world. And, science and technology programs and projects will continue to be an important step into that world. 

Target on Profit

50 Extension Review

Don D. Pretzer
*Extension Farm
Management Specialist,
Agricultural
Economics
and Business
Kansas State
University, Manhattan*

In Kansas we "rained" on our farm clientele for years. We forced them to run from Extension meeting to Extension meeting with their educational "bucket" and attempt to catch all the information needed for effective decisionmaking.

Some good reasons led to this. Agriculture kept getting more technical, more complex; so, our pool of state faculty became more and more specialized.

The "raindrops" Extension produced got even smaller, though, when our ag specialists moved into academic departments. There, researchers and teachers—who were best impressed via subject-specific leadership, conferences, workshops, and publications—helped evaluate Extension faculty for tenure and promotions.

Gradually, leadership in program planning and development shifted to the Manhattan, Kansas, campus, where it was limited by specialist schedules.

Not surprisingly, this evolution eventually encouraged our 105 county agricultural agents to feel less qualified to maintain their roles as educational generalists—those who could provide the overview of all that specialized information and localize it.

Clientele Issues

Those clientele who could easily synthesize our flood of information soon were bypassing their county agent. A few even circled our specialists and talked directly with researchers. Other clientele became increasingly dissatisfied.

By 1985, agent morale was low. Experienced agents were getting less self-satisfaction from their jobs; they wanted to feel as if they made a difference. New agents were having difficulty garnering county support.

About the same time, Extension's ag economists, who often appear on programs offered by other disciplines, raised a question that caught the imagination of some animal scientists, agronomists, entomologists, and ag engineers: "Despite our subject matter divisions, shouldn't and couldn't we be working interdisciplinarily, rather than (occasionally) multidisciplinarily?"

A Need For Change

Administration was worrying, too, that some of its problems were symptomatic and interrelated; they were eager and open to suggestions for change.

Hyde Jacobs, then associate director for ag programs, began calling together selected county agents, area specialists, and state faculty to explore possibilities. All those involved supported pouring information into one stream that included the total a farmer might need to make management decisions.

This change in programming would require intensive preparation by specialists and intensive training for county agents.

Process In Place

"The agents requested we use the 'top dogs' from our area and state staff to implement our ideas," says Don Pretzer, Jacobs' successor. "The specialists emphasized that we had to select 'true believers' for the interdisciplinary training; otherwise, the change probably wouldn't last. We all believed administration's enthusiastic, public support was necessary to make the whole thing go."

The group also decided the only way to make this indepth, integrated teaching manageable was to take a commodity-by-commodity approach. In the fall of 1986, agents in eastern Kansas would learn how to troubleshoot for grain sorghum and beef operations. Those in the west would learn about wheat and beef.

Faculty chosen to reach the planning group's goals met 19 times to plan 3 days of training, Pretzer notes. Trying to think as a "total producer" often proved difficult. Beyond that, specialists were used to parading through public meetings one by one, not finding agreement on how to blend their subjects together.

Approach Adopted

The teaching group chose, abandoned, and then resurrected the idea of taking a case-farm approach. The case farm focused the scope of their task by examining a total operation with set financial, management, and facility limits.

Suggested computer programs included FINPACK for whole-farm analyses, Kansas Extension's CROPent and BEEFent programs for enterprise evaluations, and one module of Kansas' BEEFpro program for troubleshooting-type questions.

Indepth Training

Strong encouragement from area and state administration persuaded 98 percent of Kansas' agricultural agents to attend the indepth training, called "Target On Profit."

The agents were polled again during 1987 spring planning conferences, to assess interest in continuing the indepth, integrated training. Selected specialists are now preparing fall workshops on soybean and swine enterprises in eastern Kansas and beef stockers and grain sorghum in the west.

"We're still working on how specialist field schedules can best support this new approach to programming," Pretzer says. "Since we're zeroing in on how to get information into the form producers need, we'll soon have to put delivery mechanisms into perspective, too. We've got a lot of enthusiasm for satellite uplinks, computer systems, TELENET and such, but we need to know how our publics want to receive our education." **A**

Issue 5.

Strengthen business and community support systems.

Extension Goal And Roles:

- Provide business management education for agriculture-related businesses and industries in rural communities, including education on the benefits of integrated systems approaches to problem solving.
- Provide community economic development education and assist in needs assessment, analysis, and planning.
- Educate agribusiness on adoption and use of new technology.

Issue 6.

Develop long-term agricultural policy that integrates the economic and social needs of the Nation within the global economic system.

Extension Goal And Roles:

- Provide objective education in the policymaking process.
- Facilitate dialogue among participants in the policymaking process.
- Objectively analyze impacts of alternative policies.

Issue 7.

Develop U.S. fiscal, monetary, and trade policies that are consistent with international agricultural trade goals.

Extension Goal And Roles:

- Develop producers' knowledge of basic economic principles and increase understanding of effects of macroeconomic policies on agricultural trade.
- Provide producers and leaders with analyses of alternative macroeconomic policies.
- Develop leadership skills and abilities of producers, agribusinesses, and others so they can participate more effectively in the policymaking process.

Issue 8.

Integrate marketing strategies into the production management system.

Extension Goal And Roles:

- Educate producers about alternative marketing strategies.
- Help producers develop and use production and marketing plans.

Issue 9.

Enhance the supply of competent human resources in the agricultural system.

Extension Goal And Roles:

- Create a positive attitude toward careers in the food and fiber system.
- Stimulate curriculum reform in land-grant universities consistent with future agricultural demands and needs.
- Update and maintain skills and competence of Extension and other agricultural professionals.

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